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Hazardous Spills, Industrial Accidents, and Natural Hazards The EPA's Role in Disasters

—an invited comment

The Superfund Program of the Environmental Protection Agency (EPA) has long-standing, mandated responsibilities for preparing for and responding to emergencies involving hazardous substances, pollutants, and contaminants. Because of our experience and capabilities, we are often called upon to direct overall federal response to a hazardous materials incident when the president issues a disaster declaration under the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

The Great Midwest Floods in 1993 affected nine states and caused numerous industrial accidents, such as the inundation of water treatment plants and landfills; the dislodging of tanks of propane and other chemicals; and the release of household hazardous wastes throughout hundreds of counties. Under the Federal Response Plan, the EPA worked with the Federal Emergency Management Agency and other federal agencies to respond to these incidents. These events demonstrated how significant the secondary

hazards and environmental impacts of a natural disaster can be and led to the formation of special federal interagency work groups that deal with long-term recovery and environmental impacts on wetlands.

Recently, Hurricane Floyd caused massive flooding in North Carolina (see the *Observer*, Vol. XXIV, No. 2, p. 1), polluting drinking water, creating the need for large-scale debris removal, and releasing numerous toxic substances. Indeed, North Carolinians are still dealing with major industrial and agricultural waste releases and pollution.

Increasingly, major natural hazards are causing secondary technological and industrial accidents and emergencies. Following the recent earthquake in Turkey, a major refinery fire greatly reduced refinery capacity for the entire country and threatened the safety and health of earthquake victims.

How do we meet these challenges? First we must identify likely threats and hazards, then set priorities to deal with them. Finally, perhaps more importantly, we must

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determine if we have adequate legislative mandates to regulate potential risks.

New Threats and Hazards Are Likely

Although the list of known hazards and threats is sizeable, new perils appear likely in the near future. The types of disasters that will continue include major natural disasters, industrial and technological crises and accidents, and events that involve both natural and technological hazards, but we should also expect new kinds and increasing numbers of technological accidents as well as events that were almost nonexistent in the past. For example, the U.S. and many other countries are making extensive preparations to deal with the growing threats of chemical, biological, and nuclear accidents and the use of these agents as weapons of mass destruction.

EPA's Emergency Response Roles

The EPA's emergency response program and its responsibilities under the Federal Response Plan differ, yet they complement one another. Although these are two separate national systems and funding bases, they are interdependent and interconnected. The EPA and the U.S. Coast Guard are the principal stewards of the National Response System, which prevents, prepares for, and responds to technological events involving oil and hazardous substances through the National Response Team (NRT). The NRT is made up of 16 federal agencies and 13 regional response teams, including state and local government representatives.

Natural disaster mitigation, preparedness, and response programs, such as those involving hurricanes and flooding, are administered by the Federal Emergency Management Agency. These programs are based on specific laws and regulations as well as on a powerful, integrated Federal Response Plan. They are coordinated at the federal level by the Catastrophic Disaster Response Group, which represents 27 federal agencies.

One fundamental distinction between these programs is the initiating event. Natural disasters, as their name implies, result from events in nature. While some relief of devastating losses may be available through insurance, private funds, or the resources of victims, there is also substantial assistance for recovery from public sources. By contrast, technological disasters invariably have a "responsible party," who takes measures to reduce or eliminate risk and assumes responsibility for the cost of response and recovery.

A second distinction lies in the cost of prevention and mitigation of industrial/technological risks. One of the purposes of EPA programs is to assure an appropriate response mechanism for technological hazards—particularly when they are below the threshold for a presidential disaster declaration.

Both of these systems have been highly effective mechanisms for response to, and mitigation of, major oil spills and incidents involving releases of hazardous materials, pollutants, or contaminants.



External Relationships and Efforts

The EPA has developed tools for the public to obtain information regarding hazards and disaster impacts. The Envirofacts database (<http://www.epa.gov/enviro>) helps individuals locate information about risks in their communities, such as the locations of Superfund sites, facilities requiring environmental permits, and companies' toxic emissions records.

Some of the interagency efforts that EPA's Chemical Emergency Preparedness and Prevention Office has participated in or contributed to include the National Earthquake Hazards Reduction Program, the Subcommittee on Natural Disaster Reduction, the International Decade for Natural Disaster Reduction, the University of Colorado's Natural Hazards Center, and the Board on Natural Disasters of the National Academy of Sciences, which ended this past year. (EPA expects to participate in the latter's successor organization, the Roundtable on Disasters.)

Anticipating Needs in the New Century

Recently, EPA's Science Advisory Board recommended that the agency "develop programs to deal with environmental impacts of natural hazards . . . including human health." They noted that "EPA's activities are relatively small and focused on emergency response activities for contaminant spillages. There is no national program to address the totality of environmental and public health impacts of natural hazards."

For EPA to stay abreast of rapidly evolving developments and emerging problems due to technological and natural disasters, we must:

- Better utilize existing organizational arrangements and determine whether new organizations are needed;
- Cut costs;
- Work with the insurance industry on risk assessment and management strategies;
- Find ways to improve preparation for major natural and technological hazards;
- Create an ongoing effort to anticipate agency involvement and resources; and
- Explore the possibility of "environmental scanning" that would incorporate anticipatory measures and some initial efforts of risk assessment in high-risk areas *before* a disaster occurs.

It is imperative that all levels of government interact as team members when major damaging, unexpected events compel the use of resources from multiple agencies and multiple governments. All major response activities must be on parallel tracks, with planned intersections and switching places, and they must converge smoothly. We must all work to avoid collisions!

Tim Fields
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Mitigation at the Millennium Where Do We Go From Here?

Last December, the Federal Emergency Management Agency (FEMA) convened the second Project Impact Summit, an opportunity for communities receiving federal grant funds under this banner to gather and share their experiences in what Director Witt referred to as "the mitigation movement." I perceive the "movement" to be based on three principles.

The first principle calls for spending current resources to reduce or eliminate the expenditure of future resources for the same or similar types of damages. Intuitively this makes sense. Unfortunately, there are serious gaps in the supporting data. At best, this may foster inefficient use of scarce resources. At worst, resources will not be provided, absent convincing demonstration of their efficacy in mitigation. A critical undertaking in the new millennium should be to further develop hard data to support the first mitigation principle. This involves the risk that some cherished mitigation approaches may not fare well under rigorous analysis, but the long-term credibility of the mitigation ethic is at stake.

The second principle is that "all mitigation is local." FEMA is to be commended for putting it into practice by allocating Project Impact resources directly to the selected communities. The question is the extent to which FEMA can continue to secure resources from Congress to support what is an acknowledged local responsibility. While Congress has no problem with disaster relief (postdisaster mitigation grants under the Stafford Act dwarf funds made available for Project Impact), it continues to be restive about funding predisaster mitigation.

I believe this restiveness is compounded by lack of an "end-game" scenario. Are federal predisaster mitigation grants to communities anticipated to become an annual event—forever? Will they last only until various mitigation strategies and techniques have been tested and validated, or discarded? How will we know when "enough is enough," and it's time for localities to stand—or fall—on their own?

The third principle is that mitigation must be a community undertaking, using a broad definition of the word "community." There are many commendable examples of localities involving government, business, volunteer, and nongovernment organizations in mitigation activities. But the most heartening aspect is the variety of types of individuals and/or organizations that are leading these efforts. Each seems to understand implicitly that if the undertaking is successful there will be more than enough credit to go around. Participants contribute their unique capabilities—adding to the whole without duplicating the efforts of others.



Such collaboration has been less in evidence above the local level. Organizations that could be more powerful in tandem are operating separately. I sense no disagreement over objectives, but rather a concern about who gets credit. If success at the local level depends on the willingness of groups with diverse interests and viewpoints to work collaboratively, how can it be otherwise at any other level?

My hope is that FEMA will begin the new millennium by setting the mitigation "movement" on a path that will transcend both administrations and personalities.

Robert H. Volland
American Red Cross Volunteer
Annapolis, Maryland

For more information about how to become a Project Impact community, call (202) 646-4600. For publications pertaining to Project Impact, call (800) 227-4731 or view FEMA's site on the World Wide Web: <http://www.fema.gov/impact>.

The Hazards of Responding to El Niño in South America

Having experienced a major El Niño-Southern Oscillation (ENSO) event in 1982-83, the South American countries of Ecuador, Peru, and Bolivia should have been better prepared to deal with the next major ENSO in 1997-98. Or so one would think . . .

Alas, in a critical analysis of the organized governmental/institutional response in these countries, researchers Richard Olson, Juan Pablo Sarmiento Prieto, Robert Olson, Vincent Gawronski, and Amelia Estrada found that many of the lessons from the earlier event were lost—primarily because of a lack of prior planning and the political exigencies that emerged when the second event became a “catastrophe” that received national and global attention.

The principal finding of their report, *The Marginalization of Disaster Response Institutions: The 1997-1998 El Niño Experience in Peru, Bolivia, and Ecuador* (Natural Hazards Center Special Publication #36, 2000, 44 pp.), is that while the civil defense organizations in the respective countries were the nominal “national emergency organizations” at the outset, each was rapidly pushed to the sidelines (“marginalized,” in the current social science patois) by one or more new but temporary governmental organizations

charged with managing the response. The result: confusion and duplication at the institutional level and a serious loss of credibility and morale in each country’s civil defense structure. In all cases, the 1997-98 ENSO became a major domestic media and political issue. In two of the countries,

the event became part of either official (Ecuador) or unofficial (Peru) electoral campaigns. In the third case (Bolivia), it became enmeshed in interparty coalition politics.

Following their analysis of these events, the authors assess likely institutional readiness for the next ENSO, and, perhaps most importantly, suggest how standing national emergency management agencies can better prepare—not just for the physical consequences of a future ENSO event, but for the political consequences, as well.

The Marginalization of Disaster Response Institutions can be purchased for \$10.00, plus shipping (\$5.00 for the U.S., Canada, and Mexico; \$8.00 for international mail beyond North America). Orders should be directed to the Publications Clerk, Natural Hazards Research and Applications Information Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482; (303) 492-6819; fax: (303) 492-2151; e-mail: janet.kroeckel@colorado.edu.



Y en Español

A Spanish version of Special Publication 36 (mentioned above)—*Marginación de Las Instituciones de Respuesta en Casos de Desastre: La Experiencia del Fenómeno El Niño de 1997-1998 en Perú, Bolivia y Ecuador* (SP36-S, 2000, 46 pp.)—is also available, but not from the Natural Hazards Center. It is being distributed free, both in printed form and on the World Wide Web, by the *Regional Disaster Information Center for Latin America and the Caribbean (CRID)*, Apartado 3745-1000, San José, Costa Rica; tel: (506) 296-3952; fax: (506) 231-5973; e-mail: crid@crid.or.cr; WWW: <http://www.crid.or.cr>.



Recent Additions to the Hazards Center Web Site

New Pages

<http://www.colorado.edu/hazards/sites/costs.html>

Over the years, the Natural Hazards Research and Applications Information Center has received many requests for information about the frequency, severity, social consequences, and monetary costs of natural disasters. Although apparently straightforward, such queries are extremely difficult to answer. They are complicated by such questions as: What constitutes a "disaster"? What constitutes a "cost"? Do we want to look at insured losses or all losses? How can we be sure that loss estimates are accurate for individual disasters and/or that they are comparable across disasters? How can we possibly compare the relatively high property losses in developed countries with the relatively high social costs (such as deaths, injuries, and homelessness) in developing nations? Which indirect costs should be included? And so on . . .

To respond to these questions, the Hazards Center has recently added a page to its Web site—"Selected Sources of Data on Disasters and Disaster Costs"—at the URL above.

The page does not provide numbers directly, but guides the user to various sources elsewhere on the Internet that offer such information for either the United States or the entire planet. The list focuses on sources of data relating to the human consequences of disasters, not on catalogs of physical events.

<http://www.colorado.edu/hazards/sites/photos.html>

The Hazards Center has also compiled an index of some of the more useful, comprehensive sources of visual images of hazards and disasters on the Internet. The list includes sections on all hazards, earthquakes, landslides, volcanoes, floods, and various forms of severe weather. This is a list of archived images, not real-time information, such as current hurricane satellite photographs.

Neither of these new sections of the Hazards Center Web site are, by any means, definitive. Anyone knowing of other reports of disaster costs or other archives of disaster images is invited to send such information to *David Butler, Natural Hazards Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482; (303) 492-4180; fax: (303) 492-2151; e-mail: butler@spot.colorado.edu*.

New Reports

In addition to the new pages above, the Natural Hazards Center has added several other items to its Web site:

<http://www.colorado.edu/hazards/publist.html>

<http://www.colorado.edu/hazards/wp/wp.html>

<http://www.colorado.edu/hazards/wp/wp103/wp103.html>

Since 1972, the Institute of Behavioral Science and the Natural Hazards Center at the University of Colorado have published dozens of "Working Papers" that report research findings and other information to disaster scholars and other interested persons, including policy makers and front-line hazard managers. The first 93 working papers were published in printed form and can be purchased from the Hazards Center; for those titles see the Publications List at the first URL above. Subsequent papers are available via the Web at the second URL and may be downloaded and printed.

The latest working paper is WP#103, *Mitigation and the Consequences of International Aid in Postdisaster Reconstruction*, a field study of a housing reconstruction project in Honduras undertaken following Hurricane Mitch in 1998. The author, Priya Ranganath of McGill University, recounts in detail how structures were rebuilt, then offers suggestions for how this and other projects could be designed to produce a more sustainable community.

Specifically Ranganath points out that the establishment of sound infrastructure and community support services and the creation of sustainable economy and employment may be as important to long-term recovery as the actual construction



of dwellings themselves, that careful siting of projects is also critically important, and that local community involvement is essential. In the author's words, "Well-constructed strong housing does not constitute sustainable architecture. . . . Disaster mitigation and relocation needs to have a *comprehensive approach* if one wants to be sustainable on a long-term basis, and should include not just house reconstruction but also prioritize individual and community development."

<http://www.colorado.edu/hazards/qr/qr125/qr125.html>

As regular readers of the *Observer* know, the Hazards Center sponsors "Quick Response" research that allows disaster scholars to enter the field almost immediately after impact to examine consequences. Reports from these studies are published by the Hazards Center on the World Wide Web. The newest report, available at the URL above, is:

- **QR125: California Citrus Freeze of December 1998: Place, Perception and Choice—Developing a Disaster Reconstruction Model**, by John P. Tiefenbacher, Ronald R. Hagelman, III, and Reno J. Cecora.

Following severe cold weather in the lower San Joaquin River Valley in December 1998, these researchers surveyed California citrus growers to determine relationships between locational, contextual, and perceptual factors and growers' intentions to modify land use. Specifically, they examined the distribution of damage and the motivation of growers to reduce or prevent future damage. In their report, the authors note relationships between location and risk; location and mitigation measures taken; orchard size, age of operation, membership in cooperative organizations and loss; and past experience and propensity to mitigate. They maintain that these relationships reflect the "perceptual framework" within which growers responded to the event. Concurrently, they found that insurance and disaster assistance appear to dissuade expensive loss reduction efforts while encouraging growth of the industry into marginal regions.

The complete list of quick response reports is provided at <http://www.colorado.edu/hazards/qr/qr.html>. In addition, printed copies can be purchased for \$5.00 each, plus shipping charges (\$4.00 for surface mail to any destination; and \$9.00 for international air printed matter). Orders should be directed to the *Publications Clerk, Natural Hazards Research and Applications Information Center, Campus Box 482, University of Colorado, Boulder, CO 80309-0482; (303) 492-6819; fax: (303) 492-2151; e-mail: janet.kroeckel@colorado.edu*. Prepayment is required, and checks should be payable to the University of Colorado.

New Courses and Other Resources from FEMA's Higher Education Project

One of the goals of the Federal Emergency Management Agency (FEMA) is to encourage emergency-management-related education in colleges and universities across the United States. To further this end, FEMA's Emergency Management Institute (EMI), in Emmitsburg, Maryland, established a Higher Education Project that has launched several programs.

First the project has compiled an annotated list of colleges, universities, and other institutions offering emergency management courses, certificates, and degrees. This catalog is available on-line at <http://www.fema.gov/emi/edu/higher.htm>.

Next, it has developed an outline of a potential emergency management curriculum consisting of a series of classroom-based, upper division (junior/senior), baccalaureate-level courses, and the institute is working with a variety of colleges and universities to develop these courses. Several are now complete and available on-line. Courses currently obtainable, or soon to be posted, include:

- Business and Industry Crisis Management
- Individual and Community Disaster Education
- Political and Policy Basis of Emergency Management
- Principles and Process of Hazards Mitigation
- Public Administration and Emergency Management
- Research and Analysis Methods in Emergency Management
- Social Dimensions of Disaster
- Sociology of Disaster
- Technology and Emergency Management
- Emergency Management Principles and Application for Tourism, Hospitality, and Travel Management Industries
- Terrorism and Emergency Management

In addition, as an aid to academics creating hazards and emergency management courses, a working draft *Emergency Management Bibliography* has been developed, and recently the Higher Education Project also designed a Prototype Curriculum for Associate Degrees in Emergency Management, based on existing EMI training courses that could be used or adapted by colleges.

For additional information about the FEMA Higher Education Project or to obtain background and course materials, see <http://www.fema.gov/emi/edu/higher.htm> or contact the project director, *Wayne Blanchard, FEMA Higher Education Project, Emergency Management Institute, 16825 South Seton Avenue, Emmitsburg, MD 21727; (301) 447-1262; fax: (301) 447-1598; e-mail: wayne.blanchard@fema.gov*.



The Internet Pages



Below are some of the more useful disaster Internet resources we've discovered recently. For a comprehensive list of selected sites dealing with hazards and disasters, see <http://www.colorado.edu/hazards/sites/sites.html>.

All Hazards



<http://www.pubs.asce.org>

The premier issue of the new American Society of Civil Engineers (ASCE)/Natural Hazards Center journal, *Natural Hazards Review* (see the *Observer*, Vol. XXIV, No. 3, p. 22), is now available *free* at the URL above. The publishers describe this as "the first cross-disciplinary journal to address all aspects of natural hazards loss and cost reduction."

<http://www.photolib.noaa.gov/>

The National Oceanic and Atmospheric Administration (NOAA) maintains over 10,000 photos and other digitized images on-line. The collection covers the history of geophysical sciences, depicts many aspects of the natural world, and consolidates hundreds of images of natural hazards, including the National Severe Storms Laboratory (NSSL) collection of over 250 images (with lots of tornado pictures) and the National Weather Service Historical Image Collection.

<http://www.redcross.org/disaster/safety/langrel.html>

<http://www.redcross.org/disaster/safety/prepare.html>

The Council for Disaster Preparedness is an organization chartered by the American Red Cross Board of Governors to prepare an integrated disaster preparedness plan for the San Francisco Bay Area of California. To aid the polyglot population of that region, the council has recently translated several popular disaster preparedness brochures into Arabic, Cambodian, Chinese, Farsi, Japanese, Korean, Spanish, Tagalog, and Vietnamese, and made them available on-line at the first Web site listed above. To obtain more information about these materials—which include items specifically designed for such special populations as children, the elderly, and people with disabilities—see the second Web site above.

http://www.nrel.gov/surviving_disaster

Among the multiple missions of the National Renewable Energy Laboratory (NREL) is the integration of sustainable development and renewable energy into disaster preparedness, response, relief, recovery, and mitigation. This portion of the lab's Web site highlights technology, programs, publications, and other resources to further that end.

<http://www.naturalhazards.org>

Created by Jon Van de Grint, an adjunct professor at Lakeland College in Madison, Wisconsin, this well-designed site provides quick access to basic information about all types of natural hazards. For each hazard, details on the locations and seasons of greatest risk are provided, as well as links to selected Web sites and educational products. A glossary of associated terms is also included.

<http://www.iii.org>

<http://www.iii.org/media/issues/catastrophes>

<http://www.iii.org/media/catastrophes>

The Web site of the Insurance Information Institute (III) offers considerable information about insurance issues related to disasters, a wealth of statistics on disaster losses (including data on overall losses and specific losses due to earthquakes, hurricanes, floods, and tornadoes), and guides to hazards mitigation.

<http://www.riskworld.com/> (select "Abstracts Library")

Abstracts of the 373 papers presented at the 1999 meeting of the Society for Risk Analysis, held in Atlanta, Georgia, December 5-8, are now on-line at the address above. With the theme "The Future of Risk in the 21st Century," the meeting highlighted the changing nature of risk, global and transboundary risk issues, new approaches to risk management, and possible trends in public values and democratic processes in the next 100 years.

<http://www.ibyr.adm.slu.se> (click on "Currents")

The December 1999 issue of *Currents*, a publication of the Swedish University of Agricultural Sciences, is devoted to "Humanitarianism in a Changing World" and includes articles on such topics as "NGOs in Nicaragua after Hurricane Mitch: Gaps and Opportunities in Disaster Mitigation and Preparedness," "The Full Economic Impact of Natural Disasters," and other writing about disasters and humanitarian assistance.



<http://www.usc.edu/sppd/ijmed>

The official Web site of the *International Journal of Mass Emergencies and Disasters (IJMED)* was recently updated with a temporary version of a cumulative index for the journal. The site also offers background information about the journal, the table of contents of recent issues, information on how to submit articles, a list of upcoming articles, and information on how to subscribe.

<http://www.disaster.info.desastres.net/idndr/idndr.htm>

For several years, the International Decade for Natural Disaster Reduction (IDNDR) Regional Unit for Latin America and the Caribbean, housed in San José, Costa Rica, has published *IDNDR Informs*—a thorough, well-illustrated magazine on hazard/disaster management. Volume 15 of *IDNDR Informs* is a transitional issue as the IDNDR progresses to the United Nation's successor arrangement—the International Strategy for Disaster Reduction (ISDR—see the *Observer*, Vol. XXIV, No. 4, p. 9). This latest issue includes a bounty of useful information, including links to several complete on-line texts and information about numerous programs in the region.

<http://www.crid.or.cr>

The Regional Disaster Information Center (CRID) in San José, Costa Rica, recently announced the launch of its new Web site. The site, published in English and Spanish, covers information on CRID's four main roles:

- A documentation center specializing in disasters with on-line access to more than 12,000 bibliographic references (in both English and Spanish) as well as links to other centers or information units involved in disasters.
- An information center with systemized data about experts, institutions, courses, and Web sites related to disaster prevention and risk management, mainly in Latin America and the Caribbean.
- A resource center that compiles full-text documents, training material for disaster preparedness and information management, and a multilingual disaster thesaurus.
- A coordinating center that produces and maintains information and documents to support a coordinated regional disaster management system; basic information regarding each country of the region, national entities in charge of risk management, and other organizations involved in the field of disasters; as well as agreements, declarations, and resolutions from presidential summits and international meetings.

More information about CRID is available from, and questions and comments can be directed to, the *Regional Disaster Information Center for Latin America and the Caribbean, Apartado 3745-1000, San José, Costa Rica; tel: (506) 296-3952; fax: (506) 231-5973; e-mail: crid@crid.or.cr*.

<http://www.humanitariantimes.com/>

The Humanitarian Times is an independent, nonprofit news service established by and for nongovernmental organizations so that they might share information. The *Humanitarian Times* newsletter covers disasters and conflicts, human rights issues and abuses, crisis early warning, reconstruction and reconciliation, public health, famine, foreign aid, and other disaster relief. Formerly available only by e-mail (send subscription requests to *HTimes@email.msn.com*), the newsletter, including back issues, is now available via the Web.

http://www.disastercenter.com/email/e_list.mv

The Disaster Center, a sizable collection of Internet disaster information, is now maintaining a U.S. disaster situation report mailing list. The situation report, which is sent at least once daily, provides information related to tornado, hurricane, flood, and fire risk, as well as current weather warnings, and other disaster-related reports. It also provides links to news articles and imagery. The list allows individuals to send personal reports, and the list managers are interested in links to and information about research and technical developments as well. Interested persons can join through the Web page above. Questions or suggestions can also be e-mailed to host@disastercenter.com.

listserv@listserv.aol.com

Public Safety America has launched a new e-mail discussion list addressing multiple casualty incidents (MCI). The list is aimed at the needs of planners, trainers, and commanders. To subscribe, send an e-mail note to the address above with the message: *subscribe MCI <your real name>*.

Severe Weather

<http://www.flash.org>

The Florida Alliance for Safe Homes (FLASH) is a nonprofit, public/private coalition that strives to bring together the best minds, latest research, and most practical techniques to help homeowners, homebuilders, insurers, and governmental organizations make homes safer from natural disasters (see the *Observer*, Vol. XXIII, No. 2, p. 15). Its goal is to help families minimize suffering, property damage, and economic losses caused by hurricanes, lightning, tornadoes, or wildfires by encouraging them to build, buy, and use buildings that are safe from disaster; to know the risks that natural hazards present; and to understand ways of reducing those risks. The FLASH Web site is a gateway to information, programs, and products available to meet this goal. It includes an on-line quiz to evaluate a home's safety.

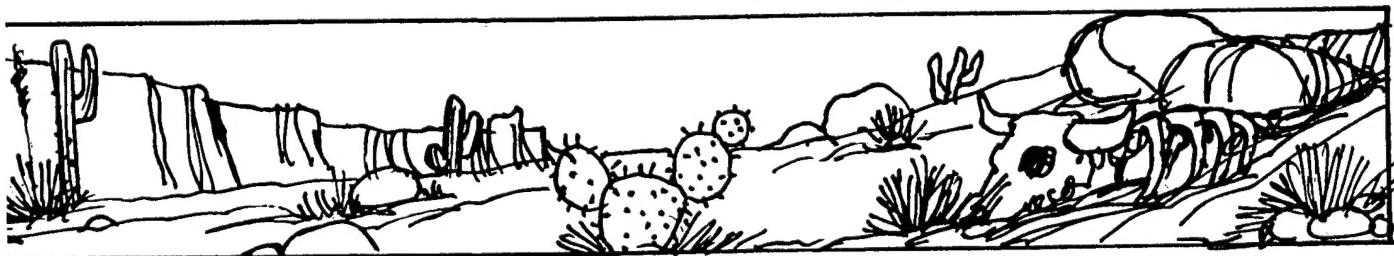
Climatic Hazards

<http://www.coaps.fsu.edu/lib/biblio/enso-bib-intro.html>

The Center for Ocean-Atmospheric Prediction Studies (COAPS) Library at Florida State University has posted a comprehensive El Niño bibliography on the Internet at the address above. The bibliography is searchable by author's name and can also be browsed page by page.

<http://www.cip.ogp.noaa.gov>

NOAA's Office of Global Programs has established a Web site for its Climate Information Project (CIP), which offers near-daily and weekly summaries of reported climatological impacts around the globe. The project also maintains an electronic mailing list; to be included, make requests or comments, or for further information, contact *Kelly Sponberg, Office of Global Programs, NOAA, 1100 Wayne Avenue, Suite 1210, Silver Spring, MD 20910; (301) 427-2089, ext. 194; fax: (301) 427-2073; e-mail: sponberg@ogp.noaa.gov*.



Floods

http://pr.water.usgs.gov/public/webb/ven_1

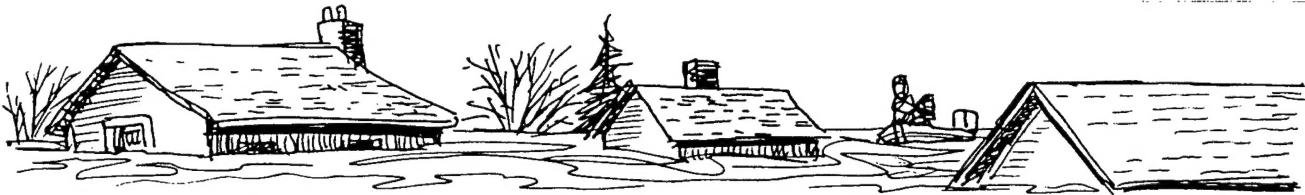
At this site, the U.S. Geological Survey offers a slide show depicting the effects of the Venezuela flash flood and landslide disaster of last December (see the *Observer*, Vol. XXIV, No. 4, p. 2; and <http://www.colorado.edu/hazards/o/maro00a.htm>). The presentation consists of a series of 42 photographs, maps, satellite images, and a table of rainfall data. The photos show landslides, flash flood deposits, damaged roads, houses, apartment buildings, industrial facilities, and other structures.

<http://www.nrdc.org/eamicus/00win/p16.htm>

In the winter 2000 edition of the Natural Resources Defense Council's quarterly magazine, *The Amicus Journal*, is an article entitled "Bay of Pigs," by Phil Bowie, that investigates the massive water pollution that accompanied flooding in North Carolina last year following Hurricane Floyd. The pollution was primarily due to the siting of corporate-scale hog farms in North Carolina floodplains.

<http://www.fema.gov/nfip/crs.htm>

The Community Rating System (CRS) is a program within the National Flood Insurance Program (NFIP) that provides incentives in the form of reduced premiums to communities that undertake flood mitigation activities that exceed NFIP minimum standards. To support the program, FEMA/NFIP has made many of the CRS publications and guidelines available on the World Wide Web at the address above. Other background information is available there, as well. Additional supporting materials are available from the on-line FEMA Mitigation Library (<http://www.fema.gov/library/lib06.htm>) and from the U.S. Army Corps of Engineers (<http://www.usace.army.mil/inet/functions/cw/cecwfp.htm>).



Earthquakes

<http://greenwood.cr.usgs.gov/pub/circulars/c1193>

USGS Circular 1193, *Implications for Earthquake Risk Reduction in the United States from the Kocaeli, Turkey, Earthquake of August 17, 1999*, is available free from this Web address. Free printed copies can also be ordered from the U.S. Geological Survey Information Services, Box 25286, Federal Center, Denver, CO 80225; (800) 435-7627 or (303) 202-4700; fax: (303) 202-4693.

<http://www.sfbayquakes.org/>

This site, a cooperative venture between the U.S. Geological Survey (USGS) and Pacific Gas & Electric, serves up three-dimensional images of the landscape, seascape, and faults of the San Francisco Bay Area. The digital images, created from satellite imagery and digital elevation models (DEMs), were developed by scientists from the Jet Propulsion Laboratory and the USGS. They include maps or perspective images looking to the north, east, and west and are available with or without earthquake fault overlays.

<http://www.gpc.peachnet.edu/~pgore/seismic.htm>

Developed by Pamela Gore of Georgia Perimeter College for an earthquake hazards workshop sponsored by the Mid America Earthquake Center and held at Georgia Tech a couple of years ago, this site offers an encyclopedic list of "Seismic Resources on the World Wide Web."

And a Hazard We Haven't Examined Before

<http://www.itc.nl/~prakash/coalfire/>

Anupma Prakash, an assistant professor in the Geological Survey Division of the International Institute for Aerospace Survey and Earth Sciences (ITC) in the Netherlands, has assembled this Web site covering coal fires, a natural hazard that threatens coal mining areas around the world. The site describes the risks associated with coal fires, examines ongoing fires in India and China, answers frequently asked questions, and provides a fascinating photo gallery of the phenomenon. Prakash is interested in receiving comments about her project and contacting other hazards professionals involved with this hazard. She can be reached at the *Geological Survey Division, International Institute for Aerospace Survey and Earth Sciences, P.O. Box 6, 7500 AA Enschede, The Netherlands*; tel: 31-53-4874286; fax: 31-53-4874336; e-mail: prakash@itc.nl.



NFPA Promoting “Firewise” Communities

The impact of severe wildfire on communities, states, and the nation is substantial. Since 1970, agencies have spent more than \$20 billion fighting fire at the fringes of population centers—the area fire professionals call the wildland/urban interface. In the last quarter century, hundreds of lives (most of them firefighters) and more than 30,000 homes and other structures have been lost.

With the growth of this hazard has come increasing recognition that, through wise community design and judicious use of prescribed fire, these costs can be reduced. Indeed, in the last decade, the National Fire Protection Association (NFPA) and other wildland fire agencies have mounted major efforts to champion such solutions. As part of its National Wildland/Urban Interface Fire Protection Program, NFPA has produced a Web site and a host of publications, videos, and case studies aimed at promoting “firewise” behavior. This work has resulted in new partnerships and improved the ability of firefighters, citizens, and our built and natural environments to cope with wildland fire.

To further this work, NFPA is inviting concerned community leaders to participate in Firewise Communities Workshops (see the *Observer*, Vol. XXIV, No. 4, p. 18). Using state-of-the-art simulation exercises, presentations, and support materials, participants will learn what it takes to create a firewise community, where wildland fire is managed as naturally as air and water quality or floodplain use. For more information about the Firewise Communities Workshop series, see the project’s Web site: <http://www.firewise.org/communities>.



AMS Launches Atmospheric Policy Program

Over the past 50 years, researchers have made substantial advances in the atmospheric sciences, including significant improvements in forecasts and warnings. Concurrently, new atmospheric issues have appeared, including climate change, ozone depletion, and pollution. Yet, despite increased understanding and public concern, no comprehensive approach to the development of atmospheric policy exists today.

To address this need, the American Meteorological Society (AMS) has initiated an Atmospheric Policy Program (APP) that will support studies and provide education concerning policies that shape atmospheric research and services in both the public and private sectors. Potential policy research could address: national and international data access and exchange; intellectual property conflicts; public versus private-sector provision of weather and climate services; air quality regulations and incentives; and responses to climate variation and change.

Through the APP, the AMS also hopes to develop opportunities for graduate students, education for policy makers who lack atmospheric science backgrounds, and education for working professionals within atmospheric science disciplines so that they might be better prepared to

assume key policy and managerial posts in government, the private sector, and academia. With support from the University Corporation for Atmospheric Research, the APP has already established an AMS Congressional Fellowship, administered by the American Association for the Advancement of Science, which will permit atmospheric scientists to work in congressional offices for one year.

During its first two years, the APP’s goals are to develop broad involvement, gain financial support, initiate two policy studies, organize a policy forum for the 2001 annual AMS meeting, and develop a 2001 summer colloquium. For more information or to provide comments and suggestions about this new initiative, please contact *Richard S. Greenfield, Director, Atmospheric Public Policy Program, 1200 New York Avenue, N.W., Suite 410, Washington, DC 20005; (202) 682-9006, ext. 217; fax: (202) 682-9298; e-mail: amspolicy@dc.ametsoc.org; WWW: http://www.ametsoc.org/ams* (select “Atmospheric Policy”).

[Adapted from *Weatherzine* — a newsletter of the Environmental and Societal Impacts Group, National Center for Atmospheric Research, <http://www.esig.ucar.edu>.)]

WASHINGTON UPDATE

FEMA Issues Acquisition and Relocation Grants

Following a generous appropriation from Congress, the Federal Emergency Management Agency (FEMA) recently announced the availability of \$215 million in grants to states for "acquisition and relocation of properties affected by Hurricane Floyd and surrounding events for hazard mitigation purposes." The agency stresses the "overriding aim of the Hurricane Floyd supplemental is to clear the floodplain by helping occupants to move out of harm's way. We intend to use the funding to meet the needs of lower income households in the areas that are most affected by flood damage."

The Interim Final Rule that explains this process can be found in the February 11 edition of the *Federal Register* (Vol. 65, No. 29, pp. 7270-7274.) The rule states that funds are to be used for acquisition and relocation only and that eligible properties must be: located in a Special Flood Hazard Area as designated under the National Flood Insurance Program, the principal residence of the owner (who agrees to sell voluntarily), and uninhabitable due to Hurricane Floyd or a surrounding natural hazard event. Funds will be allocated to states that received a presidential disaster declaration resulting from Hurricane Floyd, and states will in turn distribute grants to interested communities, tribal organizations, or private nonprofit organizations. Properties purchased with this funding must remain open space in perpetuity and may receive no future disaster assistance from any federal source. All funds must be obligated by January 1, 2002, and local sources must contribute up to 25% of the eligible costs.

For further information about the availability of these grants, contact *Robert F. Shea, Mitigation Directorate, FEMA, 500 C Street, S.W., Washington, DC 20472; (202) 646-3619; fax: (202) 646-3104; e-mail: bob.shea@fema.gov.*

President Creates Council on Future of Princeville

Princeville, North Carolina, a town established along the Tar River by freed slaves under the protection of Union troops following the Civil War, was nearly wiped out by floods from Hurricane Floyd in September 1999. The 2,100 residents lost 850 homes.

Wrestling with whether to encourage federal buyout of flooded properties or to preserve their historic community, town officials decided in December to ask the U.S. Army Corps of engineers to repair the existing flood-control dike,

which would make Princeville ineligible for buyouts from the federal government.

Recognizing that Princeville occupies a unique place in American history and that current programs may not adequately address its preservation, on February 29, 2000, President Clinton created the President's Council on the Future of Princeville, North Carolina. The council will consider how the town can best be rebuilt and protected from future floods. It is composed of cabinet secretaries and representatives from 12 federal agencies, who will submit recommendations to the president.

The complete text of the Executive Order establishing the council can be found in the *Federal Register* (Vol. 65, No. 2, pp. 11201-11202).

Corps Revises Permitting Program to Protect Wetlands

The U.S. Army Corps of Engineers has revised its Nationwide Permit (NWP) process to increase protection of floodplains and critical lakes, rivers, streams, and other bodies of water. On March 6, 2000, the Corps announced that it has replaced NWP 26, which was the general permit most frequently involving potential impacts on wetlands, with five new permits and numerous modifications to other permits (see the *Federal Register*, Vol. 65, No. 47, pp. 12818-12899). The replacement permits continue to authorize many of the same activities as before, although they are now more specific, containing terms and conditions that ensure minimal adverse effects on aquatic environments. The streams and creeks covered by the new rules account for about one-fourth of U.S. wetlands.

According to the agency:

The Corps of Engineers is very concerned with the loss of life and property resulting from unwise development in the floodplain. The Corps has recently advocated the strengthening of floodplain policy and the use of non-structural measures to reduce flood damages. We believe that the changes to the NWP program . . . will play an important role in reducing damages associated with development in the floodplain.

The Corps has also established preconstruction notification (PCN) thresholds to ensure that any activities that may have more than minimal adverse effects are reviewed by a Corps district engineer on a case-by-case basis. The Corps emphasizes that FEMA-mapped floodplains and FEMA-approved local floodplain construction requirements will be incorporated into their decisions when issuing permits.

The complete text of the "Final Notice of Issuance and Modification of Nationwide Permits" can be found in the *Federal Register*, located in any *federal depository library* or via the Internet: <http://www.access.gpo.gov>. To obtain further information about this notice, contact *David Olson or Sam Collinson, U.S. Army Corps of Engineers, attn: CECW-OR, 20 Massachusetts Avenue, N.W., Washington, DC 20314-1000; (202) 761-0199*. Interested persons can also access the Corps of Engineers Regulatory Home Page: <http://www.usace.army.mil/inet/functions/cw/cecwreg>.

FEMA Issues Report on PR's Recovery from Hurricane Georges

Following the widespread devastation in Puerto Rico caused by Hurricane Georges in September 1998, President Clinton appointed the Long-Term Recovery Task Force for Hurricane Georges in Puerto Rico to expedite the recovery process and assist the government of Puerto Rico in addressing the disaster's lasting impacts. Recently, the task force issued its final report, *Faces of Recovery: Puerto Rico, Hurricane Georges* (2000, 30 pp.).

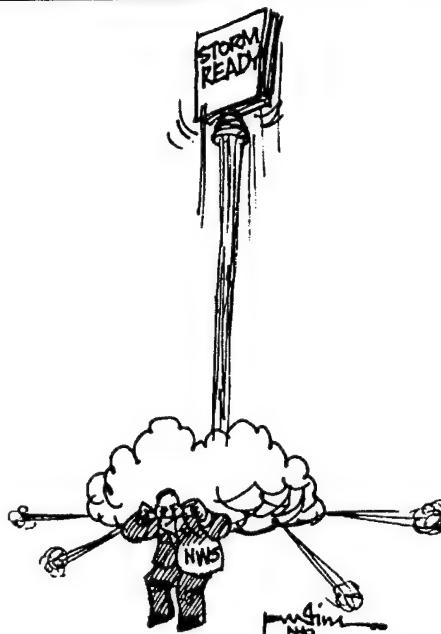
The report describes the delivery of more than \$2 billion in assistance for the island's long-term recovery. Under a plan drawn up by the task force in January 1999, the president directed FEMA and other federal agencies to make available a wide range of grants, loans, and technical resources in five areas: housing, mitigation, economic revitalization and sustainability, energy, and transportation. The report provides background information on the disaster, types of disaster assistance made available to victims, mitigation efforts undertaken, business revitalization efforts employed, and efforts to restore infrastructure.

Copies of the report, available in both English and Spanish, are free and can be obtained from *FEMA, Publications Office, 500 C Street, S.W., Washington, DC 20472; (800) 480-2520; http://www.fema.gov/library/ltrf.htm*.

Weather Service Launches StormReady

According to the National Weather Service (NWS), the U.S. is the region most prone to severe weather in the world, averaging 10,000 severe thunderstorms, 1,000 tornadoes, and 1,000 flash floods a year. In an effort to encourage communities to improve local hazardous weather operations and public awareness, the NWS recently launched "StormReady," a nationwide program that helps communities develop plans to handle local severe weather threats, from tsunamis to tornadoes.

This voluntary program provides communities with clear-cut advice from their local National Weather Service office, state and local emergency managers, and the media.



Begun by the NWS Forecast Office in Tulsa, Oklahoma, the program is now nationwide and aims to make 20 communities StormReady each year for the next five years. The program will

- work to improve the timeliness and effectiveness of hazardous weather warnings;
- help local emergency managers justify costs to support their hazardous-weather-related programs;
- provide support to local emergency managers; and
- provide an "image incentive" to local governments that can identify themselves as being StormReady.

For communities interested in participating in the program, the StormReady program has specific criteria regarding communications, reception of NWS information, hydrometeorological monitoring, local warning dissemination, community preparedness, and program administration.

The StormReady Web site offers background information about the program; details on how to participate; a list of useful publications; safety information about winter weather, hurricanes, extreme heat, and other severe weather; and additional information for dealing with meteorological hazards. The site also provides a list of people to contact for further information; it can be found at: <http://www.nws.noaa.gov/stormready>.

FEMA Says Floyd Claims Second Highest

Hurricane Floyd ravaged more than a dozen states from Florida to Maine last September, resulting in substantially more insurance payments than originally anticipated. According to the National Flood Insurance Program (NFIP), more than \$310 million has been paid to settle 15,000 claims for flood damage; the average paid claim was \$21,237. The

NFIP estimates that total insurance payments for Floyd will eventually reach \$460 million, making these floods the second most expensive in the history of the program, exceeded only by the Louisiana floods of May 1995, which resulted in \$584 million in claims.

Although the flood insurance claims were large, the majority of victims had no flood insurance. In North Carolina, the state hardest hit by the hurricane, only 81,000 policies were in force, and much of the flooding there occurred outside high-risk zones. Nationwide, only about one-fourth of households in special flood hazard areas have flood insurance.

For more information about these data and the NFIP, contact *FEMA, 500 C Street, S.W., Washington, DC 20472; e-mail: eipa@fema.gov; WWW: http://www.fema.gov/nfip.*

IG Issues FEMA Top 10 List

In its 21st *Semi-Annual Report to Congress* (April 1, 1999 - September 30, 1999), FEMA's Inspector General's (IG) Office reviewed, among other items, the 10 most serious management challenges facing the agency. They are: 1) containing disaster costs, 2) clarifying disaster declaration criteria, 3) sustaining the national mitigation program, 4) assessing state and local preparedness for emergencies, 5) enhancing the financial soundness and equity of the National Flood Insurance Program (NFIP), 6) updating flood maps, 7) developing reliable procedures for complying with the Government Performance and Results Act of 1993, 8) enhancing financial management operations, 9) developing a viable grants management program, and 10) implementing and maintaining information management systems.

Further, the IG assessed the effectiveness of FEMA's Substantial Damage Rule as a mitigation tool. The rule requires communities participating in the NFIP to ensure that flood-prone structures incurring damage equal to or greater than 50% of their value be replaced with flood-resistant structures and (usually) be elevated. After an examination of insurance claim data, the IG found that many communities are not implementing mitigation under this rule, resulting in higher insurance premiums for homeowners. The office recommends that FEMA centralize management of substantially damaged structures; notify policyholders, prior to payment, that their homes may be substantially damaged and eligible for mitigation funding; re-rate flood policies based on a structure's flood risk; require communities to use market value capped at replacement cost to calculate substantial damage; increase training regarding this rule; and visit communities to monitor compliance.

The *Semi-Annual Report* (1999, 40 pp.) also describes numerous investigations regarding attempted fraud, inappropriate grant awards, and bribery of government employees. It describes the agency's Fraud Hotline, the Disaster Fraud Training course currently being developed, the IG's partici-

pation in other FEMA activities, and reviews of legislative and regulatory activities.

Copies of the *Semi-Annual Report*, as well as the *Auditors' Report on FEMA's Fiscal Year 1999 Financial Statements* (Report #H-04-00) are free and can be obtained from Rita Rios, *Office of Inspector General, FEMA, 500 C Street, S.W., Room 506, Washington, DC 20472; (202) 646-4166; fax: (202) 646-3901; e-mail: Rita.Rios@fema.gov; WWW: http://www.fema.gov/ig.*

House Subcommittee Hearing Testimony Posted on Web

The U.S. House of Representatives Committee on Science examines issues relating to science and public policy. Recently, the committee posted testimony from hearings that may be of interest to *Observer* readers.

The Subcommittee on Basic Research held a hearing on Wednesday, October 20, 1999, on "The Turkey, Taiwan, and Mexico Earthquakes: Lessons Learned." Witnesses testified regarding the role of the National Earthquake Information Center of the U.S. Geological Survey during the recent quakes, structural failures and their relevance for the U.S., the geological characteristics of the quake areas and their similarities to U.S. locales, and urban search and rescue efforts following the quake. This information can be viewed at http://www.house.gov/science/106_hearing.htm.

Other hearings held by the Committee on Science are also available from that Web site and include "Tornadoes: Understanding, Modeling, and Forecasting Supercell Storms," conducted June 16, 1999; and "Year 2000 Computer Problem: Did the World Overreact, and What Did We Learn?" conducted January 21, 2000.

FEMA Adjusts Grant Amounts

FEMA recently adjusted the amount of money available for grants made under the Robert T. Stafford Disaster Relief and Emergency Assistance Act by 2.3%. Under Section 411 of the Stafford Act, which provides funds for the Individual and Family Grant Program, the maximum amount of any grant made will be increased to \$13,900 for all disasters declared on or after October 1, 1999. Under Section 422, which covers assistance for small projects under FEMA's Public Assistance Program, grants made to states, local governments, or owners and operators of nonprofit facilities are increased to \$48,900 for all disasters declared on or after that date. The increases are based on the Consumer Price Index for the prior 12-month period.

For more information about these grants, contact Madge Dale, *FEMA, Response and Recovery Directorate, 500 C Street, S.W., Washington, DC 20472; (202) 646-3772.*

DRM

Mitigating Natural Hazards and Technological Risks

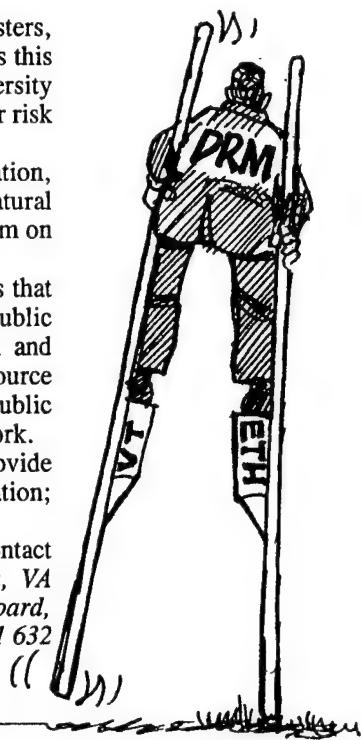
Although developed countries have substantially improved local abilities to manage disasters, in many cases developing countries have not been able to adapt these techniques. To address this problem, the Board of the Swiss Federal Institutes of Technology and Virginia Tech University recently created the World Institute for Disaster Risk Management (DRM) to develop disaster risk reduction approaches that promote public safety and sustainable development.

The DRM program is interdisciplinary, addressing strategy development, implementation, education, and knowledge dissemination in relation to both human-caused risks and natural disasters. The DRM will also play an active role in the World Bank's ProVention Consortium on Natural and Technological Catastrophes (see the *Observer*, Vol. XXIV, No. 4, p. 3).

The Swiss Federal Institutes of Technology (ETH) represents numerous research centers that study a broad range of hazard-related issues, from risk management to engineering to public policy. Virginia Tech has broad, multidisciplinary capabilities and experience in natural and technological disaster management. Its areas of expertise include seismology, water resource management, environmental and hazardous materials studies, transportation research, and public policy. Several affiliated universities from around the world are also part of the DRM network.

DRM will develop tools for rapid risk assessment and resources for risk management; provide consultation and quality control in project development and management; conduct risk evaluation; and develop comprehensive risk management programs for all sectors of society.

To obtain further information about the World Institute for Disaster Risk Management, contact *DRM, Alexandria Research Institute, 206 North Washington Street, Suite 400, Alexandria, VA 22314; (703) 518-8080; fax: (703) 518-8085; e-mail: widrm@vt.edu; or DRM, c/o ETH Board, Haldelwig 15, ETH Centre, CH-8092 Zurich, Switzerland; tel: +41 1 632 20 02; fax: +41 1 632 11 90; e-mail: drm@ethrat.ch.*



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NH Observer

MCEER Introduces Strategic Partnerships Network

The Multidisciplinary Center for Earthquake Engineering Research (MCEER), headquartered at the State University of New York at Buffalo, has launched a Strategic Partnerships Network that will unite participants from business, industry, and government in the study, development, and application of advanced technologies to reduce earthquake damage and losses nationwide.

MCEER's program features three levels of membership: Flagship Partner, Premier Partner, and Partner—each with its own array of network benefits. It also includes Specialty Interest Groups (SIGs) or "communities of interest," centered around such areas as: site remediation, structural control, advanced systems analysis and high-performance materials, condition assessment, and decision support systems. SIG membership will be open to members of all disciplines involved in technology development and application—manufacturers; consultants; architects, engineers, and other construction professionals; computer software developers; technology end-users; and facility owners in business, industry, and government. The groups are intended to encourage networking and development of mutually beneficial initiatives among participants and center researchers.

MCEER's Strategic Partnerships Network offers a variety of annual benefits to members, including access to

MCEER researchers and students and opportunities for collaborative research with those scientists, fellow partners, and government agencies; preferred access to MCEER experimental facilities and equipment; preferred enrollment in the center's Professional and Continuing Education (PACE) short courses; and early access to research results and state-of-the-art ideas. Members also become part of MCEER's User Advisory Network, providing input into the center's research program, and receive additional benefits, including educational seminars, publications, and information services.

MCEER expertise and research interests are wide-ranging and include seismology; geotechnical, structural, and risk engineering; architecture and urban planning; structural control and technologies; materials science; sociology; economics; and public policy.

For additional information on the MCEER Strategic Partnerships Network, contact *Donald J. Goralski, MCEER, State University of New York at Buffalo, Red Jacket Quadrangle, Buffalo, NY 14261; (716) 645-3391, ext. 108; fax: (716) 645-3399; e-mail: goralski@acsu.buffalo.edu; WWW: http://mceer.buffalo.edu.*

THREE HUNDRED
PAGES TO SAY
DO TO OTHERS
AS YOU WOULD
HAVE THEM DO
TO YOU.



Disseminating Humanitarian Principles A Sphere Project Update

The Sphere Project was established in 1997 to develop and promote a "Humanitarian Charter and Minimum Standards in Disaster Response." It grew out of collaboration among numerous non-governmental organizations (NGOs) concerned about the increasing worldwide demand for humanitarian assistance and the need to ensure the quality of such aid. The project sought to develop a set of universal minimum standards in core areas of humanitarian assistance (water supply and sanitation, nutrition, food aid, shelter and site planning, and health services).

Developing those standards involved a wide network of experts who examined existing principles and protocols and set out to consolidate those norms into one document. The resultant preliminary edition of the *Sphere Humanitarian Charter and Minimum Standards in Disaster Response* handbook, published in October 1998, has been critically reviewed and edited, and a revised English-language edition (330 pages) is now available. French, Spanish, and Russian versions are also being prepared.

The handbook can be ordered in hard copy or viewed on the Web. Printed copies cost £10.95, plus shipping and handling. To place an order, see the Web site below, or contact *Oxfam Publishing*, 274 Banbury Road, Oxford OX2 7DZ, U.K.; fax: +44 1865 313713; e-mail: publish@oxfam.org.uk.

The Sphere Project Web site, with the *Humanitarian Charter and Minimum Standards* handbook, is <http://www.spheredproject.org>. It not only includes the book, but also information about plans to implement the revised standards through training, testing, and evaluation. For additional information about the Sphere Project and these next steps, contact *Nan Buzard*, Project Manager, P.O. Box 372, 1211 Geneva 19, Switzerland; tel: (41 22) 730 4501; fax: (41 22) 730 4905; e-mail: sphere@ifcr.org.

1999 Fifth Worse for Insured Losses

In 1999, U.S. property and casualty insurers paid \$8.2 billion to homeowners and businesses for losses caused by 27 catastrophic events. The number of claims filed was the third highest in a single year, and the Property Claim Services division of Insurance Services Office, Inc. (ISO) says the total cost was the fifth highest for catastrophe losses since 1949, when ISO's record-keeping began. ISO defines a catastrophe as an event that causes \$25 million or more in insured property losses and affects a significant number of policyholders and insurers.

The 10 states that suffered the highest losses were:

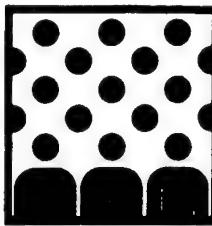
State	Amount	Principal Causes
Oklahoma	\$1.1 billion	May tornadoes
North Carolina	\$928 million	Hurricanes Dennis and Floyd
Texas	\$515 million	Severe weather
Virginia	\$485 million	Hurricanes Dennis and Floyd
Michigan	\$375 million	Severe weather
Ohio	\$375 million	Severe weather
Arkansas	\$325 million	Severe weather
Pennsylvania	\$255 million	Hurricane Floyd
New York	\$230 million	Severe weather
Florida	\$222 million	Hurricanes Floyd and Irene

ISO notes that 1999 was the first time in 25 years that California did not suffer a single catastrophe, while Florida, the state that incurred the greatest insured losses during the decade, was only 10th, despite an active hurricane season. Although the number of events was the second lowest in the decade, eight hurricanes struck the U.S., five of which were category 3 or higher. The record year for losses was 1992, when Hurricane Andrew struck the U.S., causing insured losses measuring \$22.9 billion.

The top 10 states for losses from 1990 to 1999 were:

State	Amount
Florida	\$19.3 billion
California	\$17.5 billion
Texas	\$6.6 billion
North Carolina	\$3.4 billion
Oklahoma	\$2.6 billion
New York	\$2.4 billion
Minnesota	\$2.3 billion
Kansas	\$2.0 billion
Illinois	\$1.7 billion
Colorado	\$1.7 billion

For more information, contact *Christopher Guidette*, *Insurance Services Office, Inc.*, 7 World Trade Center, New York, NY 10048-1199; (212) 898-6609; e-mail: cguidette@iso.com; WWW: <http://www.iso.com>.



CONFERENCES AND TRAINING

Below are some of the more recent conference announcements received by the Natural Hazards Center. A comprehensive list of hazard/disaster meetings is posted on our World Wide Web site: <http://www.colorado.edu/hazards/conf.html>.

Advancing Community Sustainability. Sponsor: *Virginia Tech University, Roanoke, Virginia: June 1-3, 2000.* This meeting will allow those seeking to foster sustainability in their communities to talk with practitioners who have implemented sustainable projects. Sessions will address the practice of sustainability in three areas of community life: physical development, infrastructure design, and economic structure. Optional training workshops will also be provided. For more information, contact *Richard Rich, Department of Political Science, 531 Major Williams Hall, Virginia Tech University, Blacksburg, VA 24061-0130; (540) 231-6571; fax: (540) 231-6078; e-mail: urban@vt.edu; http://www.conted.vt.edu/advcom.htm.*

Disaster Recovery Planning: Insuring Business Continuity. Offered by: *American Management Association International, Hyannis, Massachusetts: June 14-16, 2000; Chicago, Illinois: October 11-13, 2000; Scottsdale, Arizona: December 6-8, 2000.* The American Management Association is a membership-based management development organization that offers training and education in many areas. This seminar will teach participants how to analyze their company's current level of preparedness and then develop a comprehensive emergency management program. It is designed to aid persons who are either starting or upgrading a disaster plan. It covers phases of emergency management; recovery plan design; state-of-the-art security measures and safeguards; business impact analysis; and employee awareness and training. To enroll, contact the *American Management Association, P.O. Box 169, Saranac Lake, NY 12983; fax: (518) 891-0368; WWW: http://www.amanet.org.*

Society for Risk Analysis (SRA) Year 2000 International Symposium. *McLean, Virginia: June 21-24, 2000.* With support from the National Science Foundation, SRA is holding this year 2000 symposium on risk analysis to provide the foundation and planning for one or more world congresses in subsequent years. The symposium will begin an international dialogue on the state of the field and emerging opportunities, focusing on selected key issues associated with methods and practice in risk analysis. In particular, it

will address how to build connections between SRA and other related organizations and how to bridge the gap between risk researchers and persons directly involved in risk management. For more information, contact *SRA, 1313 Dolley Madison Boulevard, Suite 402, McLean, VA 22101; (703) 790-1745; e-mail: sra@burkinc.com.*

First Asian Executive Development Program for Emergency Managers. Offered by: *Asia Pacific Disaster Management Centre (APDMC) in collaboration with the Australian Institute of Police Management, Makati City, Philippines: July 3-14, 2000.* This program includes a two-week residential course, field work, and a 16-week distance learning component during which participants will prepare a research paper. When all elements are completed, students can earn a university accredited Graduate Certificate in Executive Development. For details, contact *John W. Barrett, APDMC, CPO Box 1005, Makati Central Post Office, 1250 Makati City, Philippines; tel: (632) 810 5444; fax: (632) 817 0894; e-mail: apdmc@nsclub.net.*

International Symposium: 10 Years of the IDNDR—How Near Are We Towards Hydro-Geological Disaster Reduction? Conveners: *National Group for the Prevention of Hydro-Geological Disasters of the National Research Council of Italy and the Italian National Committee of UNESCO's International Hydrological Program, Perugia, Italy: July 16-20, 2000.* The United Nation's International Decade for Natural Disaster Reduction (IDNDR) offered a unique opportunity for scholars and professionals from diverse disciplines to address the major issues affecting the reduction of social vulnerability to natural disasters. In light of the apparent increase in recent major catastrophes, this symposium will examine the progress made during the IDNDR from both scientific and social perspectives and formulate concrete proposals to address issues that emerged during that time. The conference will be conducted in English. To obtain a conference brochure, contact the *Organising Committee c/o WARREDOC, Villa La Colombella, 06080 Colombella, Perugia, Italy; tel: 0039 75 6910167; fax: 0039 75 6919326.*

Disaster Resistant Jobs Train the Trainer Course (Course Code E464). Offered by the Federal Emergency Management Agency (FEMA), Emergency Management Institute; developed in conjunction with the Economic Development Administration (EDA). Emmitsburg, Maryland: August 15-18, 2000; October 31-November 3, 2000; January 23-26, 2001; April 24-27, 2001; September 11-14, 2001. Communities that have experienced major disasters often lose a significant portion of their economic base. Studies show that after a disaster, 60% of small and medium sized businesses fail within two years; many simply do not reopen. To help communities protect against such problems, FEMA and EDA have developed this course to create a cadre of trainers who can increase awareness and resiliency in their local communities through the education of community groups. For more information, contact Joe Bills, FEMA, Emergency Management Institute, 16825 South Seton Avenue, Emmitsburg, MD 21727; (301) 447-1356; e-mail: joe.bills@fema.gov; WWW: <http://www.fema.gov/emi/e464.htm>.

Specialized Disaster Management Training Course for Persons Responsible for Health Sector Disaster Programs. Organizer: Pan American Health Organization/World Health Organization (PAHO/WHO). San José, Costa Rica: September 4-15, 2000. Recent large-scale disasters in Latin America, such as the El Niño of 1997-98, Hurricane Mitch, and this winter's Venezuelan floods and landslides, have demonstrated a real need for in-depth training in all aspects of disaster management for persons responsible for national health sector disaster programs. To aid these individuals, PAHO/WHO is organizing this two-week course, which they intend to offer annually. It will cover mass casualty management, damage evaluation, information management, resource mobilization, the incorporation of mitigation measures into recovery, and other aspects of disaster management. The course will be conducted in Spanish. To register or obtain more information, contact PAHO, 525 23rd Street, N.W., Washington, DC 20037; (202) 974-3520; fax: (202) 974-3527; e-mail: disaster@paho.org; WWW: <http://www.paho.org/english/ped/pedhome.htm>.

International Conference for Environmental Hazard Mitigation (ICEHM). Organizer: Center of Hazard and Environmental Mitigation, Cairo University. Giza, Egypt: September 9-12, 2000. This conference will focus on archeological conservation and environmental protection, sustainable development of soil and water resources, seismic stability and soil reaction, natural hazard prediction and control, environmental impact and economic assessment, health care management, environmental hazards and insurance, environmental risk analysis, waste management, small industry development and hazards, and air quality monitoring and improvement. Abstracts are due May 15. More information is available from Adel A. ElFouly, Center of Environmental Hazard Mitigation, Cairo University, Giza, Egypt; tel: (202) 5674836 or (202) 5674838; fax: (202) 5540593; e-mail: cehm@orex.org; WWW: <http://www.skyboom.com/cehm>.

17th International Symposium on Automation and Robotics in Construction. Taipei, Taiwan: September 18-20, 2000. In memory of last year's 921 Ji-Ji (Taiwan) earthquake, a

session entitled "Hazard Management Technology" will be included in this year's symposium. It will focus on:

- automated warning and monitoring of hazardous situations in construction,
- automated response systems and emergency service for construction hazards,
- hazard management technology,
- communication strategy in disaster situations,
- knowledge base and decision support for the reduction of hazards, and
- real-time response systems for hazard mitigation.

More information is available from <http://www.ce.ntu.edu.tw/~isarc17>; or contact Walter Chen, Department of Civil Engineering, National Taipei University of Technology, Taipei, Taiwan, R.O.C; tel: 886-2-23623356 or 886-2-23630231, ext. 2403/3208; fax: 886-2-23631558; e-mail: waltchen99@yahoo.com.

Interregional Local and Community Level Disaster Risk Management (LCLDRM-3) Course. Offered by: Asia Pacific Disaster Management Centre (APDMC). Makati City, Philippines: October 2-13, 2000. This course has been accredited by Charles Sturt University (Australia) and has an associated distance learning component that can be applied toward a Graduate Certificate in Emergency Management. For complete information, contact John W. Barrett, APDMC, P.O. Box 1005, Makati Central Post Office, 1250 Makati City, Philippines; tel: (632) 810-5444; fax: (632) 817-0894; e-mail: apdmc@nsclub.net.

Annual Meeting of the National Association of Flood and Stormwater Management Agencies (NAFSMA). San Diego, California: October 23-26, 2000. NAFSMA is an organization of public agencies whose mission includes the protection of lives, property, and economic welfare from the adverse impacts of storm and flood waters. The association advocates public policy, encourages the development of technologies, and conducts education programs to support that mission. The NAFSMA annual meeting covers virtually all aspects of flood and stormwater management—from hydrological concerns to political and social issues. For complete information, contact NAFSMA, 1299 Pennsylvania Avenue, N.W., Suite 800 West, Washington, DC 20004; (202) 218-4122; fax: (202) 842-0621; WWW: <http://www.nafsma.org>.

Disaster Forum 2000. Sponsors: Emergency Response Management Consulting Ltd., Alberta Disaster Services, Canadian Red Cross, and others. Edmonton, Alberta, Canada: November 1-4, 2000. Disaster Forum 2000 is intended to improve the level of preparedness of any organization involved in responding to disasters. It will examine all aspects of disasters and emergencies, including mitigation, recovery, and communications. Preliminary information is available from the Disaster Forum Association, 11215 Jasper Avenue, Suite 437, Edmonton, AB T5K 0L5, Canada; (780) 427-8626; fax: (780) 422-1549; e-mail: disaster@edmc.net; WWW: <http://www.edmc.net/disaster>.

International Association of Emergency Managers (IAEM) Annual Conference and Exhibition. Austin, Texas: Novem-

ber 4-7, 2000. The IAEM annual meeting is a major forum wherein emergency managers from all levels of government and the private sector can discuss the latest issues and innovations in emergency management. IAEM is a nonprofit organization that promotes the saving of lives and protection of property during emergencies and disasters; it is the chief professional organization for emergency managers in North America. For more information about IAEM and its annual conference, contact *IAEM, 111 Park Place, Falls Church, VA 22046-4513; (703) 538-1795; fax: (703) 241-5603; e-mail: iaem@aol.com; WWW: http://www.iaem.com.*

Earthquake Engineering in the Next Millennium: Symposium in Honor of Takuji Kobori. Sponsors: California Universities for Research in Earthquake Engineering and the Kobori Symposium Japan Committee. Kyoto, Japan: November 7, 2000. Since 1947, Takuji Kobori, now professor emeritus at Kyoto University, has authored over 350 papers on earthquake engineering. His work has strongly influenced the discipline worldwide, and the presentations at this symposium will focus on some of the central topics of Kobori's career. Details will be available in a conference announcement to be released in June. To be added to the conference mailing list, contact *Yoshiyuki Suzuki, Kyoto University, e-mail: suzuki@zeisei.dpri.kyoto-u.ac.jp; or Wilfred Iwan, Earthquake Engineering Research Laboratory, M/C 104-44, California Institute of Technology, Pasadena, CA 91125; (626) 395-4144; e-mail: wdiwan@caltech.edu.*

Sixth International Conference on Seismic Zonation (6ICSZ): Managing Earthquake Risk in the 21st Century. Sponsor: Earthquake Engineering Research Institute (EERI). Palm Springs, California: November 12-15, 2000. 6ICSZ will bring together members of the scientific, engineering, planning, and public policy disciplines—both users and developers of seismic zonation information—to review current developments and new needs in the field. The conference will address six major themes: financial risk management, planning and public policy, engineering and codes, new mapping technologies, new developments in hazard estimation, and lifelines and utilities. For more information, contact EERI at the address below.

2001 Earthquake Engineering Research Institute (EERI) Annual Meeting. Monterey, California: February 7-10, 2001. For their 2001 meeting, EERI members will congregate along the shores of beautiful Monterey Bay, where they will discuss matters seismic from A to Z. For details, contact *EERI, 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411; e-mail: eeri@eeri.org; WWW: http://www.eeri.org.*

Fourth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics. San Diego, California: March 26-31, 2001. This meeting will include a special session on "Geotechnical Aspects of the Taiwan, Turkey, Greece, and Other Recent Earthquakes." Abstracts are due May 30, 2000. For more information contact *Shamsher Prakash, Civil Engineering Department, University of Missouri-Rolla, 1870 Miner Circle, Rolla, MO 65409-0030; (573) 341-4489; fax: (573) 341-*

4729; e-mail: prakash@novell.civil.umr.edu; WWW: http://www.umr.edu/~conted/conf8767.html.

Fourth National Conference and Exposition of the National Hydrologic Warning Council. Columbus, Ohio: May 15-18, 2001. The National Hydrologic Warning Council (NHWC) was established to provide national coordination and a common, effective voice for the flood warning community. One means of accomplishing these goals is the council's biannual conference and exposition, during which members and other interested persons can examine and discuss the newest technologies and latest issues in flood warning. More information is available by contacting *Dean Bolton, (614) 889-7154; or Chris Crompton, (714) 567-6360; e-mail: cromptonc@pfrd.co.orange.ca.us; WWW: http://www.alertsystems.org.*

Association of State Floodplain Managers (ASFPM) 25th National Conference. Charlotte, North Carolina: June 3-8, 2001. Since 1977, individuals concerned about the management of floods have attended the ASFPM annual conference in order to meet others with similar concerns and learn about the newest solutions to their problems. Indeed, the ASFPM annual meeting addresses the entire spectrum of floodplain management issues, programs, and resources. To receive a conference announcement, contact *ASFPM, 2809 Fish Hatchery Road, Suite 204, Madison, WI 53713-3120; (608) 274-0123; fax: (608) 274-0696; e-mail: asfpm@floods.org; WWW: http://www.floods.org.*

Pacific Rim Summit on Natural Hazards. Sponsors: Stanford University, U.S. Geological Survey, Circum-Pacific Council, and other public and private organizations. Palo Alto, California: August 2001. This three-day meeting will address the socioeconomic consequences of natural hazards for the countries that rim the Pacific Ocean. The "Crowding the Rim Summit" will bring together natural and social scientists, demographers, economists, risk managers, and mitigation experts to address how local natural hazards in the Pacific Rim are becoming regional problems. The meeting is designed to initiate planning to mitigate the global effects of disastrous events among the changing population and increasingly interdependent economic infrastructures of the region. The summit will combine on-site professional exchanges, game simulations, and disaster-resistance strategy development with real-time interactive Internet conferencing among educational institutions throughout the region. Three objectives of the summit include: 1) developing an educational curriculum for those most at risk; 2) crafting risk reduction policy recommendations to be delivered to political leaders; and 3) conducting a series of post-summit educational workshops throughout the Pacific Rim for decision makers, business and industry leaders, and citizens in order to communicate the issues identified at this meeting and motivate community action. The organizers are currently seeking program ideas, participants, and funding sources. For more information, contact *David Howell, U.S. Geological Survey, M/S 975, 345 Middlefield Road, Menlo Park, CA 94025; (650) 329-5430; fax: (650) 329-4999; e-mail: dhowell@usgs.gov.*

The Latest Works from the Venerable DRC

At least once a year, we receive a shipment of the latest publications of the Disaster Research Center (DRC) at the University of Delaware. The DRC was the first social science research center in the world established to study disasters and other community-wide crises, and DRC researchers have carried out nearly 600 studies since the center was founded in 1963.

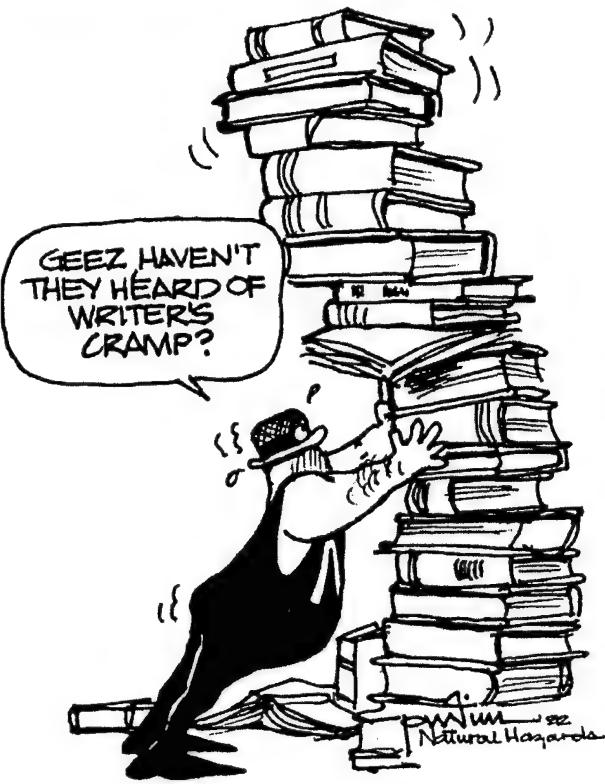
To order any of the items listed below, contact the DRC, Publications, University of Delaware, Newark, DE 19716; (302) 831-6618; fax: (302) 831-2091; e-mail: castelli@udel.edu; WWW: <http://www.udel.edu/DRC>. Add 10% to all orders for postage and handling. All orders must be prepaid, and checks should be payable to the University of Delaware. In addition, all Preliminary Papers and a few of the other items can be viewed on the DRC Web site.

Articles (\$5.00)

- #332: *How Will Social Science Help Us Deal with Earthquakes?*, by Kathleen J. Tierney. 1998. 9 pp.
- #334: *Implications for Programmes and Policies from Future Disaster Trends*, by E.L. Quarantelli. 1999. 13 pp.
- #335: *Predicting Evacuation in Two Major Disasters: Risk Perception, Social Influence, and Access to Resources*, by Jasmin K. Riad, Fran H. Norris, and R. Barry Ruback. 1999. 18 pp.
- #336: *Towards a Critical Sociology of Risk*, by Kathleen J. Tierney. 1999. 16 pp.
- #337: *Improving Earthquake Loss Estimation: Review, Assessment and Extension of Loss Estimation Methodologies*, by Kathleen J. Tierney, Stephanie E. Chang, Ronald T. Eguchi, Adam Rose, and Masanobu Shinozuka. 1999. 18 pp.

Preliminary Papers (\$5.00 each)

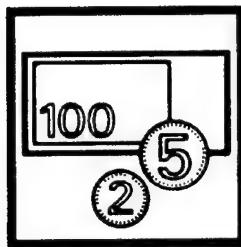
- #276: *The Psychology of Evacuation and the Design of Policy*, by Jasmin K. Riad, W.L. Waugh, and Fran H. Norris. 1998. 34 pp.
- #277: *Individual and Organizational Response to Natural Disasters and Other Crisis Events: The Continuing Value of the DRC Typology*, by Gary R. Webb. 1999. 21 pp.
- #278: *Cross-Border Issues in Disaster Response*, by Tricia Wachtendorff. 1999. 20 pp.
- #280: *Disaster Related Social Behavior: Summary of 50 Years of Research Findings*, by E.L. Quarantelli. 1999. 15 pp.
- #281: *Businesses and Disasters: Empirical Patterns and Unanswered Questions*, by Gary R. Webb, Kathleen J. Tierney, and James M. Dahlhammer. 1999. 30 pp.
- #283: *The Sociology of Panic*, by E.L. Quarantelli. 1999. 12 pp.
- #284: *Restoration Activities Following the Izmit, Turkey, Earthquake of August 17, 1999*, by Gary R. Webb. 1999. 33 pp.
- #286: *The Disaster Recovery Process: What We Know and Do Not Know from Research*, by E.L. Quarantelli. 1999. 23 pp.
- #287: *Lessons Learned from the Popular Culture of Disaster*, by Patricia Wachtendorff. 1999. 13 pp.



- #289: *Role Improvising Under Conditions of Uncertainty: A Classification of Types*, by Gary R. Webb, Michael Beverly, Megan McMichael, James Noon, and Tabitha Patterson. 1999. 48 pp.
- #290: *Exploring the Popular Culture of Disaster*, by Patricia Wachtendorff. 1999. 6 pp.
- #291: *Stability and Change in Stress, Resources, and Psychological Distress Following Natural Disasters: Findings from a Longitudinal Study of Hurricane Andrew*, by Fran H. Norris, J.L. Perilla, Jasmin K. Riad, K. Kaniasty, and E. Lavizzo. 1999. 41 pp.
- #293: *Predicting Long-Term Business Recovery from Disaster: A Comparison of the Loma Prieta Earthquake and Hurricane Andrew*, by Gary R. Webb, Kathleen J. Tierney, and James M. Dahlhammer. 1999. 32 pp.
- #294: *The Dialogue Between Voltaire and Rousseau on the Lisbon Earthquake: The Emergence of a Social Science View*, by Russell R. Dynes. 1999. 27 pp.

Dissertations and Theses (\$25.00)

- #34: Dissertation: *Socio-Structural Differentials in the Mental Health Impact of the 1994 Northridge Earthquake*, by Melvin J.J. D'Souza. 1999. 264 pp.
- #11: Masters Thesis: *A River Runs Through It: Cross Border Interaction During the 1997 Red River Flood*, by Patricia Wachtendorff. 1999. 140 pp.



CONTRACTS AND GRANTS

Below are descriptions of recently awarded contracts and grants for the study of hazards and disasters. An inventory of contracts and grants awarded from 1995 to the present (primarily those funded by the National Science Foundation) is available on the Natural Hazards Center's Web site: <http://www.colorado.edu/grants.html>.

An Investigation of the Geotechnical Aspects of the June 1999 Central Mexico Earthquakes—Preliminary Assessment. Funding: National Science Foundation, \$12,110, 12 months. Principal Investigator: *Jonathan D. Bray, Pacific Earthquake Engineering Research (PEER) Center and National Information Service for Earthquake Engineering (NISEE), University of California, 1301 South 46th Street, Richmond, CA 94804; (510) 231-9554; fax: (510) 231-9471; e-mail: bray@ce.berkeley.edu; WWW: http://nisee.ce.berkeley.edu.*

On June 15 and 21, 1999, the central region of Mexico was shaken by strong earthquakes, resulting in 15 fatalities and damage to thousands of buildings. Sponsored by the PEER Center, a research team of students and faculty from the University of California at Berkeley and the National Autonomous University of Mexico conducted a postearthquake geotechnical field investigation. This grant supports the publication of a report on their findings that will be made available both in hard copy and via the Internet.

Ranking Risk Factors Affected by Coastal Storms. Funding: Public Entity Risk Institute, 24 months. Principal investigator: *Robert S. Young, Department of Geosciences and Natural Resources Management, Western Carolina University, Cullowhee, NC 28723; (828) 227-3822; fax: (828) 227-7647; e-mail: rsyoung@wcu.edu.*

This project will produce a quantitative method for understanding physical storm processes and their impacts on coastlines and coastal property. Losses due to coastal hurricanes have risen sharply over the past two decades, increasing taxes and creating severe hardships for many insurers. Without good data ranking the risk factors from coastal hurricanes, communities are unable to prioritize spending on coastal protection. This project will provide information on which factors are more important in reducing the damage caused by powerful storms, e.g., dune width, beach width, elevation, or vegetation. The researchers will use various data to develop a storm energy distribution map for coastal areas, create a "Coastal Risk" Web site, and provide publicly available educational resources.

USFA Funds Fire Safety Education

To strengthen fire safety awareness among high risk groups, the U.S. Fire Administration (USFA), part of the Federal Emergency Management Agency, has created the National Fire Safety Campaign grant program that will deliver educational services and materials to the elderly, children, African-Americans, Latinos, Native Americans, and rural and urban populations.

This new grant program is designed to help organizations that are currently working within their respective communities to continue their efforts to educate high-risk groups about the importance of fire safety and prevention. Funding is available to organizations such as civic clubs, sororities and fraternities, youth groups, senior citizen groups, fire departments, fire associations, and schools.

For more information and to obtain an application package, contact *Cindy Adams, Office of Financial Management, U.S. Fire Administration, 16825 South Seton Avenue, Emmitsburg, MD 21727; (301) 447-1221; fax: (301) 447-1092; e-mail: cindy.adams@fema.gov; WWW: http://www.usfa.fema.gov.*





WMO, IADB Establish El Niño Mitigation Program for Latin America and the Caribbean

On September 22, 1999, in Geneva, Switzerland, the director general of the World Meteorological Organization (WMO) and the president of the Inter-American Development Bank (IADB) signed documents establishing a \$1,538,000 program to assist Latin American and Caribbean nations in reducing the effects of El Niño through better scientific monitoring and meteorological forecasting. Under this program, studies will also be conducted to identify El Niño impacts on vulnerable groups. For more information, contact *Taysir M. Al-Ghanem, Information and Public Affairs Office, WMO, 7 bis, avenue de la Paix, P.O. Box 2300, CH-1211, Geneva 2, Switzerland; tel: 41-22-730-8315; fax: 41-22-733-2829; e-mail: ipa@gateway.wmo.ch; WWW: http://www.wmo.ch.*

[Taken from *ENSO Signal*, a newsletter published by the *Environmental and Societal Impacts Group, National Center for Atmospheric Research*; WWW: <http://www.ucar.edu/esig/signal>.]

Impacts of Disasters on Small, Not-for-Profit and Business Organizations. Funding: Public Entity Risk Institute, \$307,995, 36 months. Principal Investigator: *Daniel J. Alesch, Center for Organizational Studies, Department of Public and Environmental Affairs, Suite 324, Rose Hall, 2120 Nicolet Drive, University of Wisconsin-Green Bay, Green Bay, WI 54311-7001; (920) 465-2045; fax: (920) 465-2791; e-mail: aleschd@uwgb.edu.*

This grant launches the first major project undertaken by the new Center for Organizational Studies at the University of Wisconsin-Green Bay. Based on the hypothesis that disaster losses suffered by small organizations are understated, it will measure direct business losses borne by owners, uninsured losses due to business interruption, income lost while trying to recover, and lost capital assets. The majority of disaster loss estimates only measure insured losses and public aid to affected communities. Investigators will examine several organizations with one to 100 employees in disaster-prone areas. The goals of the project are to produce a report identifying which organizations survive and which fail due to natural disasters, a set of training materials to help small organizations mitigate and recover from disasters, and an informational Web site.

Processes Mediating Judgements of Likelihood. Funding: National Science Foundation, \$178,664, 36 months. Principal Investigator: *Paul D. Windschitl, Department of Psychology, E120 SSH, University of Iowa, Iowa City, IA; (319) 335-2435; e-mail: paul-windschitl@uiowa.edu.*

Likelihood judgment plays a critical role in decisions in almost all of life's domains, including decisions regarding natural hazards. Often, people must judge the likelihood of one event when alternative events are possible. This research will examine fundamental processes underlying such likelihood judgments, which are often largely dependent upon a comparison between the strength of the evidence for the focal event versus the strongest alternative event (rather than aggregate evidence for all alternative events). Although this heuristic generally produces reasonable judgements, it can also produce perceived likelihoods that are not consistent with probability theory. Nine experiments will investigate the nature, strength, and scope of the comparison heuristic in a wide range of situations.

Cooperative Agreement to the Pan American Health Organization (PAHO) to Initiate the Post Hurricane Reconstruction of the Public Healthcare System in Central America and the Caribbean. Funding: Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), \$1 million, 12 months. Contact: *PAHO, Emergency Preparedness and Disaster Relief Coordination Program, 525 23rd Street, N.W., Washington, DC 20037; (202) 974-3520; fax: (202) 775-4578; e-mail: disaster@paho.org; WWW: <http://www.paho.org/english/ped/pedhome.htm>.*

This funding will support PAHO's contribution to the CDC Hurricane Reconstruction Project, which includes programs to prevent and control infectious diseases in the regions affected by Hurricanes Georges and Mitch in September and October 1998, including Honduras, Guatemala, El Salvador, Nicaragua, Costa Rica, the Dominican Republic, and Haiti. PAHO will promote disease control and prevention strategy development, disseminate health information, and sponsor meetings. It will also oversee the planning for a regional laboratory network, provide assistance to ministries of health for developing programs to prevent and control disease, and coordinate training programs.

IM-AWARE (Instructional Meteorology—Applications of Weather for Awareness, Readiness and Education). Funding: National Science Foundation, \$73,848, 12 months. Principal Investigators: *Kevin A. Kloesel and Renee A. McPherson, Oklahoma Climate Survey, SEC 1430, University of Oklahoma, Norman, OK; (405) 325-5270; e-mail: longhorn@ou.edu.*

This project will use Oklahoma Climate Survey Web browser software to teach students about tornado development, structure, and impacts. This education module will provide a series of tornado simulations using data from the May 3, 1999, tornado event in Oklahoma and Kansas to learn about tornado prediction, warning, and mitigation. It will incorporate mathematical and scientific concepts and describe how they apply to social issues such as public safety and insurance provision, as well as governmental policy issues such as federal funding and disaster declarations.

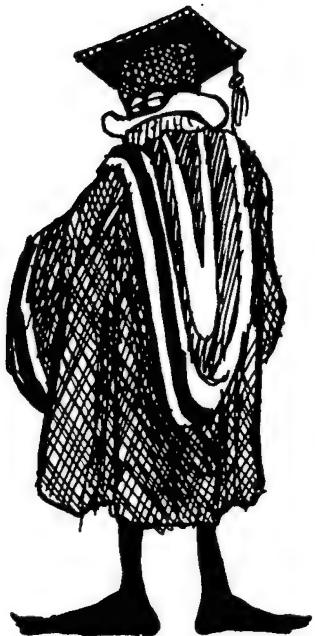
New Certificate Programs and Graduate Training in Disaster Management and Humanitarian Assistance

From CEDMHA and UH-Manoa

On January 13, the Center of Excellence in Disaster Management and Humanitarian Assistance (CEDMHA) and the University of Hawaii-Manoa introduced the foundation course for a new multidisciplinary training and research program leading to a Certificate in Disaster Management and Humanitarian Assistance. This new program will draw on the Asia-Pacific expertise of the university faculty and the extensive field experience of CEDMHA staff. In addition, the program developers plan to invite experts from various international response and relief agencies and other universities to contribute. Participants will include both civilian and military students. For additional information about the new certificate program, contact the *Center of Excellence in Disaster Management and Humanitarian Assistance, c/o Tripler Army Medical Center, 1 Jarrett White Road (MCPA-DM), Tripler AMC, HI 96859-5000; (808) 433-7035; fax: (808) 433-1757; WWW: http://coe.tamc.ameddy.army.mil or http://coe-dmha.org.* Interested persons can also contact the program coordinator, James. D. White, (808) 956-3265; e-mail: *jwhite@hawaii.edu*.



From GSU

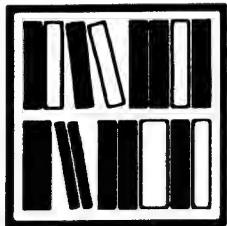


The Andrew Young School of Policy Studies at Georgia State University (GSU) offers a graduate certificate in disaster management for students preparing for careers in the field, public and nonprofit agency administrators working in public safety and emergency response agencies, and other administrators who need to be better prepared for emergencies. Students may choose disaster management as a concentration in the Master of Public Administration and the Master of Science in Urban Policy Studies programs, and students in the Ph.D. in Public Policy program offered jointly by GSU and Georgia Tech University may choose disaster management as one of their two areas of specialization.

Completion of the certificate program requires 12 semester hours of graduate work, including the courses "Disaster Management," "Disaster Relief and Recovery," and two electives. This curriculum provides an overview of disaster management in public and nonprofit agencies; an introduction to emergency management policies and programs with a focus on disaster mitigation; and specialized work on land-use planning, geographic information systems, terrorism, environmental planning, the economic impact of disasters, and other issues.

Atlanta is home to a number of major emergency management agencies, including the Federal Emergency Management Agency's Region IV Office, the Georgia Emergency Management Agency, the Atlanta-Fulton County Emergency Management Agency, and other city and county emergency management agencies; major public health agencies and hospitals, including the Centers for Disease Control and Prevention; several large international humanitarian agencies, including CARE and Save the Children; large nonprofit disaster relief agencies, including the American Red Cross and the Salvation Army; and numerous other public safety and emergency response organizations.

For more information about the programs available from Georgia State University, contact William L. Waugh, Jr., Department of Public Administration and Urban Studies, Andrew Young School of Policy Studies, Georgia State University, Atlanta, GA 30303; (404) 651-4592; fax: (404) 651-1378; e-mail: *wwaugh@gwu.edu*.



RECENT PUBLICATIONS

Below are summaries of some of the recent, more useful publications on hazards and disasters received by the Natural Hazards Center. A complete bibliography of publications received from 1995 through 2000 is posted on our World Wide Web site: <http://www.colorado.edu/bib/bib.html>.

All Hazards

The Angry Earth: Disaster in Anthropological Perspective. Anthony Oliver-Smith and Susanna Hoffman, Editors. 2000. 256 pp. \$27.99. Copies are available from Routledge Customer Service, 7625 Empire Drive, Florence, KY 41042; (800) 634-7064; fax: (800) 248-4724; e-mail: info@routledge-ny.com; WWW: <http://www.routledge-ny.com>.

The Angry Earth takes an anthropological view of the response of disaster victims both in the immediate aftermath and over time. This collection of essays explores how various cultures in different historical moments have responded to calamity, particularly examining the complex relationship between society and environment. It contains sections on "Disasters, Environment, and Culture"; "Environmental Pattern, Hazards, and Culture: The Archaeological Perspective"; "The Cultural and Social Construction of Catastrophe"; "Varieties of Cultural Response"; "Agencies, Survivors, and Reconstruction"; and "Disaster and Cultural Continuity."

Natural Disasters: Protecting the Public's Health. 2000. 130 pp. \$22.00. Copies can be purchased from the Pan American Health Organization (PAHO), Sales and Distribution Center, P.O. Box 27, Annapolis Junction, MD 20701-0027; (301) 617-7806; fax: (301) 206-9789; e-mail: paho@pmds.com; WWW: <http://publications.paho.org>.

This publication outlines the health sector's role in reducing the impact of disasters, laying out a framework that a health sector administrator can use to manage such events. It describes the overall effects of disasters on health, highlighting myths and realities. The book emphasizes the multisectoral nature of disaster preparedness, sets forth guidelines for preparing disaster plans and programs before a disaster strikes, and provides information on managing supplies in disasters.

Living with Hazards, Dealing with Disasters: An Introduction to Emergency Management. William L. Waugh, Jr. 1999. 248 pp. \$49.95, hardcover; \$22.95, paperback. Copies can be ordered from M.E. Sharpe, Inc., 80 Business Park Drive, Armonk, NY 10504; (800) 541-6563; fax: (914) 273-2106; WWW: <http://www.meshape.com>.

Living with Hazards, Dealing with Disasters is an introduction to the field of emergency management, a discipline that is becoming increasingly complex and professional. It discusses the history of emergency management and its evolution from volunteer effort to trained intervention; the organization of emergency management systems—local, state, regional, national, international, governmental, business, and nonprofit; management of the response to natural disasters and human-caused disasters; policy issues; and technological and political challenges. Twenty case studies illustrate the handling of actual disasters, including the Northridge earthquake and the Oklahoma City bombing. The book also provides discussion questions and guides to on-line information sources.

Natural Hazards. Simon Ross. 1998. 99 pp. £7.00. To obtain a copy, contact Glasgow University Bookshop, John McIntyre Building, University Avenue, Glasgow, Scotland G12 8PP; +44 (0) 141 339 1463; fax: +44 (0) 141 339 3690; e-mail: gu@johnsmith.co.uk; WWW: <http://www.johnsmith.co.uk>.

Natural Hazards is part of a series of "Environment and People Integrated Course Supplements" created to support college-level courses on human interaction with the environment. It defines natural hazards and describes current issues in dealing with such phenomena (including whether these events are entirely "natural"), the effects of such events on human populations, and concepts of risk. Individual chapters are devoted to earthquakes, volcanoes, landslides, severe weather, and flooding. The concluding chapter discusses the transformation of natural events into disasters, counting disaster costs, differences between disasters in rich and poor countries, the human hand in disasters, and the likely future of disasters.

"Research Needs for Engineering Aspects of Natural Disasters." James P. Heaney, Jon Peterka, and Leonard T. Wright. *Journal of Infrastructure Systems* (March 2000), pp. 4-14. Subscriptions (print and online): \$36.00, members of the American Society of Civil Engineers (ASCE); \$54.00, nonmembers. To order, contact ASCE, Nonmember Subscriptions, P.O. Box 79342; Baltimore, MD 21279-0342; (800) 548-2723 or (703) 295-6300; fax: (703) 295-6211; WWW: <http://www.pubs.asce.org>.

This article presents engineering research needs related to the Second U.S. Assessment of Research and Applications for Natural Hazards (see the *Observer*, Vol. XXIII, No. 4, p. 3). It describes the evolution of codes and practice in engineering and the development of these practices within the context of hazards management. Next, it presents an overview of the state of the art in current engineering by type of hazard and type of infrastructure. It also describes engineering design in terms of reducing loss of life and economic damage and offers a framework for using these goals as a basis for design. Finally, it enumerates engineering research needs for promoting more sustainable hazards management.

Earth Matters: State of the Planet. Winter 1999/2000. 70 pp. Free. The complete text of this publication can be viewed on-line: <http://www.earthinstitute.columbia.edu>. For information on obtaining a printed version, contact Faye Yates, Columbia Earth Institute, 405 Low Library, Columbia University, 535 West 116th Street, New York, NY 10027; (212) 854-3830; fax: (212) 854-6309; e-mail: faye@ldeo.columbia.edu.

This publication contains the proceedings of a conference on the "State of the Planet" held in November 1999. That meeting brought together national leaders in science, public policy, business, journalism, and even poetry to assess changes in and impacts on the earth. One of four conference sessions addressed natural disasters. Papers presented during this session examine the recently released national assessment of natural hazards research and policy, *Disasters by Design*

(see the *Observer*, Vol. XXIII, No. 4, p. 3), by Dennis S. Mileti; "Natural Disasters, Politics, and Property Rights in the U.S.," by Rutherford H. Platt; "Learning from Landslides," by Brenda Bell; and "Living with Natural Disasters: A View from the Field," by Encho Gospodinov.

Famine, Conflict and Response: A Basic Guide. Frederick C. Cuny, with Richard B. Hill. 1999. 189 pp. \$23.95, plus \$4.50 shipping. To purchase a copy, contact Kumarian Press, Inc., 14 Oakwood Avenue, West Hartford, CT 06119-2127; (800) 289-2664 or (860) 233-5895; fax: (860) 233-6072; e-mail: kpbooks@aol.com; WWW: <http://www.kpbooks.com>.

Fred Cuny was a well-known disaster relief and response expert who conducted work worldwide in both natural and human-caused disasters. He completed *Famine, Conflict and Response* prior to his disappearance in Chechnya in 1995. The book is a practical guide to immediate and lasting solutions to famine through effective identification of the underlying causes. Cuny focuses particularly on counter-famine measures that address people's livelihoods, not just their survival. He describes the causes of famine, its consequences and geography, societal responses to the problem, early warning and monitoring systems, famine relief, pre-emptive and containment strategies, income-generating projects, emergency response, food-relief programs, famine logistics, assessment and monitoring, operational issues, and famine operations during conflict.

1999 Disaster Losses Kit: Help from the IRS. Catalog No. 24928R. 1999. 216 pp. Free. Copies can be requested by calling (800) 829-3676. For more information on federal taxes and disasters, access the IRS Web site: <http://www.irs.gov>.

Although to many the term "help from the IRS" is an oxymoron, this publication offers the best tax advice available from the U.S. Internal Revenue Service on dealing with losses from disasters. The kit contains tax forms needed to claim a casualty loss for property destroyed by a natural disaster and answers to common questions such

as how to extend the time needed to file a return, how to receive free tax service, and how to identify which disaster losses to claim. Because many disaster victims may have lost tax records, the IRS also explains how victims can obtain copies of previously filed tax returns free of charge.

Emergency Planning and Management: Ensuring Your Company's Survival in the Event of a Disaster. Second Edition. William H. Stringfield. 2000. 320 pp. \$69.00, plus \$6.00 shipping. Order from the Government Institutes Division, ABS Group, Inc., 4 Research Place, Suite 200, Rockville, MD 20850; (301) 921-2323; fax: (301) 921-0264; e-mail: giinfo@govinst.com; WWW: <http://www.govinst.com>.

Emergency Planning and Management teaches business managers how to assess their business' vulnerability to disasters and formulate federally compliant plans to reduce the risk. It outlines issues related to such common disasters as fires, explosions, floods, earthquakes, and transportation accidents, and provides updated information on terrorism, federal response, workplace violence, civil disturbances, sabotage, and hazardous materials response. It also provides information on insurance, loans, and the role of the Small Business Administration in disaster recovery; techniques for managing computer threats and viruses; and disaster planning and management contacts. Finally, it includes a sample emergency plan, a glossary, and a list of Internet resources.

Climate and Weather

Storm Warning: Gambling with the Climate of Our Planet. Lydia Dotto. 1999. 344 pp. \$13.95, plus \$5.50 shipping. Available from Random House Customer Service, 2451 South Wolf Road, Des Plaines, IL 60018; (800) 323-9872; fax: (800) 233-3294; WWW: <http://www.randomhouse.com>.

In *Storm Warning*, Dotto suggests that, rather than not being able to change the weather, humans may be already doing just that and that recent record-breaking extreme weather events are linked to global

New From IBHS

Flood Insurance, Building Codes, Showcase States, and Impact Standards

Flood Insurance and the 1997 Flood in Grand Forks, North Dakota: Homeowner Survey Results. IBHS Technical Report Series #1. 1999. 35 pp. Free.

Building Code News: Summary of State Code Activities. Published irregularly. Free.

Showcase State for Natural Disaster Resistance and Resilience: Rhode Island First Year Progress Report. 2000. 40 pp. For availability, contact IBHS.

"Industry Perspective: Impact Resistance Standards." *Natural Hazard Mitigation Insights*, No. 12 (February 2000). Free, available on-line.

Copies of these items can be requested from the Institute for Business and Home Safety (IBHS), 175 Federal Street, Suite 500, Boston, MA 02110-2222; (617) 292-2003; fax: (617) 292-2022; WWW: <http://www.ibhs.org>.

In 1997, devastating floods along the Red River of the North in North Dakota affected over 90% of the city of Grand Forks' 50,000 residents. Only 20% of damaged homes were covered by flood insurance, leaving taxpayers and victims to shoulder most of the costs of recovery. In an effort to improve awareness of the need for disaster protection, the "Grand Forks Flood Insurance Summit" was held, bringing together federal, state, and local government officials with the insurance industry. In preparation for the summit, IBHS and the University of North Dakota Bureau of Governmental Affairs conducted a survey of Grand Forks homeowners to determine which factors influenced their decision to purchase or not purchase flood insurance. The *Homeowner Survey Results* report contains the conclusions of that

project and indicates that most homeowners simply believed they were not at risk from flooding. It also describes actions taken since the flood and provides recommendations to the insurance industry and government to improve flood awareness and the purchase and retention of flood insurance.

Building Code News updates interested individuals on building code activities that lessen the impacts of hazards on buildings. The latest issue provides an update on state model code development in Florida, Missouri, New York, and North and South Carolina.

The *First Year Progress Report* for the first IBHS-designated Showcase State (see the *Observer*, Vol. XXIII, No. 5, p. 11) describes Rhode Island's progress in developing a statewide hazard identification and risk assessment program, activities that increased community-level disaster response and recovery capabilities, participation of the private sector in this project, creation of a public outreach campaign regarding the nonstructural retrofit of child care centers, incorporation of loss reduction methods into local planning processes and into the state building code, and adaptation of "Showcase State" strategies by the Federal Emergency Management Agency's Project Impact communities.

Much of the damage in high wind events, such as hurricanes and tornadoes, is caused when wind-borne debris penetrates windows and doors, allowing wind and water inside. Building code organizations have developed three separate protocols to test how well a door or window will withstand impacts. The latest issue of *Natural Hazards Insights* examines the differences in these protocols and recommends specific product certification or requirements.

warming caused by greenhouse gases in our atmosphere. She describes why she believes humans are gambling with the climate and why extreme weather events will be the most likely agent through which global warming will affect humans. She then looks at scientific research and debate on global temperature increases, environmental and socioeconomic impacts of climate change, increases in disease and death due to climate change, psychological impacts of extreme weather, adaptation to climate change, and the struggle for a climate treaty.

The Climate Revealed. William J. Burroughs. 1999. 192 pp. \$39.95. To purchase a copy, contact Cambridge University Press, 110 Midland Avenue, Port Chester, NY 10573-4930; (800) 872-7423 or (914) 937-9600; fax: (914) 937-4712; e-mail: orders@cup.org; WWW: <http://www.cup.org>.

Why do some tropical storms harmlessly drift out to sea, while others bring widespread damage and destruction to thousands of miles of land? In the next 50 years, will global warming be responsible for sinking Manhattan and the coastal areas of Long Island? Is it really all that calm in the eye of a hurricane? In **The Climate Revealed**, William Burroughs addresses such questions and provides a comprehensive overview of weather around the world, particularly recent scientific research regarding global warming, El Niño, La Niña, and hail formation in the upper atmosphere; the impact of volcanoes on weather and climate; weather research and forecasting; and the geography of the disappearing ozone layer. Organizing his information by climatic regions of the world, Burroughs describes the criteria meteorologists consider when predicting the duration, intensity, and danger level of various storms; the structure of tornadoes; the intensity of monsoons; and influences on weather patterns. Other topics include avalanches, the effects of urbanization on weather and climate, ocean circulation patterns, drought, thunderstorms, and climate modeling.

Water in Australia: Resources and Management. David Ingle Smith. 1998. 400 pp. \$65.00 (Australian). To order a copy, contact Customer Service, Oxford University Press Australia, GPO Box 2784Y, Melbourne, VIC 3001, Australia; tel: 61 3 9934 9122; fax: 61 3 9934 9100; WWW: <http://www.oup.com.au>.

Australia is the driest continent on earth, experiencing the most variable rainfall and runoff, and thus poses unique water resource management challenges. **Water in Australia** examines water supply and location, its usability, the country's recurring patterns of floods and droughts, the history of Australian water resource development, the emergence of environmental policies, sustainable development, changes to the hydrological cycle, land-use issues, climate change, technology, and the future of water resource management for the continent.

Snow in America. Bernard Mergen. 1999. 340 pp. \$15.95. To order, contact Smithsonian Institution Press, P.O. Box 960, Herndon, VA 20172-0960; (800) 782-4612 or (202) 287-3738; fax: (202) 287-3184; <http://www.si.edu>.

In **Snow in America**, Mergen argues that neither the environmental nor the symbolic importance of snow is fully appreciated. He notes that snow falls on more than half of the North American continent every year and is an important influence on global climate and ecology, although we tend to overlook its significance. He presents a history of how we deal with snow, including as an element of our culture, and describes how we have gone from thinking of snow as a symbol of moral and physical fitness to snow as an indicator of global climate change. He surveys literary and artistic depictions of snow from the beginning of our nation through the 19th century; examines the impact of snow on the westward expansion and the building of railroads and cities; and looks at the recreational aspects of snow, the scientific study of snow in the 20th century (including avalanches and snowpack measurement), snow as a natural resource, and the use of snow in literature and art.

Floods

Water Resources: A New Era for Coordination. William Whipple, Jr. 1998. 132 pp. \$29.25, American Society of Civil Engineers (ASCE) members: \$39.00, nonmembers. Copies are available from ASCE

Press, 1801 Alexander Bell Drive, Reston, VA 20191-4400; (703) 295-6275; fax: (703) 295-6278; e-mail: ascepress@asce.org; WWW: <http://www.asce.org>.

Whipple offers solutions to current problems in drought management and river control. Specifically, he outlines the many aspects and interests that must be considered in making effective water resource management decisions. Topics cover the many challenges in water resource management, such as environmental impacts, population pressures, water supply, floods and flood control, navigation, hydroelectric power, irrigation, comprehensive planning, water quality, stormwater management, and coordination among multiple levels of government. In addition, Whipple examines issues relating to wetlands control and stream restoration, the environmental impacts of dams, urbanization, floodplain management, and environmental uses of floodplain zoning.

Mandatory Purchase of Flood Insurance Guidelines. FEMA 186. 1999. 203 pp. Free. Copies can be obtained from the Federal Emergency Management Agency (FEMA), Publications Distribution Facility, P.O. Box 2012, Jessup, MD 20794-2012; (800) 480-2520.

Title V of the Riegle Community Development and Regulatory Improvement Act of 1994 substantially amended national flood insurance legislation, tightening the provisions for the mandatory purchase of flood insurance. These guidelines present an overview of the Riegle Act and explain the changes. Divided into five sections, they include an introduction to flood insurance requirements under the National Flood Insurance Program and sections on coverage availability; mandatory purchase provisions in general; requirements for condominiums, condos, and timeshares; and key provisions of the legislation. Several appendices contain the relevant statutes and regulations addressed in these guidelines as well as specific supplementary information referenced in the document.

Earthquakes and Geology

Preventing the Nightmare: Designing a Model Program to Encourage Owners of Homes and Apartments to Do Earthquake Retrofits. 1999. 25 pp. \$10.00, plus \$3.00 shipping.

Preventing the Nightmare—Technical Appendices. 1999. 156 pp. \$20.00, plus \$5.00 shipping.

Stand Up to the Quake—Get Your Home in Shape. 1999. 17 minutes. VHS. \$7.00, plus \$3.00 shipping.

Orders from within California must include sales tax. To order any of the items above, contact the Association of Bay Area Governments (ABAG), P.O. Box 2050, Oakland, CA 94606-2050; (510) 464-7900; fax: (510) 464-7985; e-mail: info@abag.ca.gov; WWW: <http://www.abag.ca.gov/abag>.

The **Preventing the Nightmare** publications provide cities and counties in the San Francisco Bay Area, as well as state and federal agencies, ideas for developing a comprehensive program to encourage owners to retrofit their houses, condominiums, apartments, and mobile homes to resist earthquakes. The first publication outlines the problem; discusses the need for comprehensive retrofit programs and the need for differing approaches for single-family versus multi-family dwelling units; provides an understanding of risk perception; and offers tips on developing local programs, locating funding, establishing financial incentives, and ensuring a program is comprehensive.

The **Technical Appendices** contain a detailed analysis of data from a survey of owners of single-family homes regarding earthquake retrofit attitudes and activities, an analysis of data from a home inspector survey of residential earthquake retrofit rates, descriptions of existing government financial incentives for earthquake retrofit, and an analysis of data from a survey of owners of multi-family residential buildings.

Stand Up to the Quake describes techniques homeowners can use to make their buildings more earthquake-resistant.

Earthquake Damage in Oregon: Preliminary Estimates of Future Earthquake Losses. Yumei Wang and J.L. Clark. Special Paper 29. 1999. 60 pp. \$10.00. Copies can be purchased from the Nature of the Northwest Information Center, 800 N.E. Oregon Street, Suite 177,

Portland, OR 97232; (503) 872-2750; e-mail: orders@naturenw.org or info@naturenw.org; WWW: http://www.naturenw.org.

Earthquakes are a fact of life in Oregon, ranging in magnitude from events only measurable by machine to magnitude 9 temblors that generate tsunamis. This report estimates by county future damage from earthquakes in a number of categories, including deaths and injuries, displaced households, building damage, direct economic losses, losses to essential facilities and schools, damage to transportation systems, and loss of broadcasting stations. It also includes estimates for sheltering requirements and debris removal. The authors use two scenarios to calculate impacts: a magnitude 8.5 Cascadia earthquake and a 500-year return interval model. They describe significant historical earthquakes in Oregon, related hazards, and earthquake preparation.

1999 WSSPC Awards in Excellence. 2000. 90 pp. \$15.00. Copies of this volume may be obtained from the Western States Seismic Policy Council (WSSPC), 121 Second Street, 4th Floor, San Francisco, CA 94105; (415) 974-6435; fax: (415) 974-1747; e-mail: wsspc@wsspc.org; WWW: http://www.wsspc.org.

WSSPC is a consortium of state emergency management directors and geologists who work together to lessen the impacts of earthquakes in the western regions of the U.S., Canada, and U.S. Pacific Terri-

ties. Every year, WSSPC bestows Awards in Excellence to recognize achievement in different areas of earthquake mitigation, preparedness, and response. To share these programs with others, WSSPC created this document, which describes awards given in the following categories: overall excellence and mitigation efforts, outreach to schools, outreach to business/government, outreach to the general public, and response plans/materials. The booklet also contains implementation materials for each of the projects.

Environmental Geology: Geology and the Human Environment. Matthew R. Bennett and Peter Doyle. 1998. 512 pp. \$44.95, plus \$2.50 shipping. Copies can be ordered from John Wiley & Sons, Inc., Distribution Center, 1 Wiley Drive, Somerset, NJ 08875-1272; (732) 469-4400 or (800) 225-5945; fax: (732) 302-2300; e-mail: catalog@wiley.com; WWW: http://catalog.wiley.com.

This volume examines the interaction of humans with the geological environment. For example, the authors show how urban growth fuels the demand for mineral and water resources, tests the skills of engineering geologists, produces vast volumes of waste that must be managed, and increases vulnerability to natural hazards. This comprehensive introduction to the subject includes discussions of earthquakes, landslides, erosion, and floods, and outlines approaches for mitigating their impacts.

World Bank Issues New Publications

The World Bank was founded in 1944 to fight global poverty. The bank helps developing countries by providing resources, sharing knowledge, building capacity, and forging partnerships in the public and private sectors through various development projects. To aid its mission, the World Bank created the Disaster Management Facility (DMF) to promote disaster risk management in sustainable development (see the *Observer*, Vol. XXIV, No. 4, p. 3; Vol. XXIII, No. 4, p. 5). The facility recently issued two new publications.

Investing in Prevention: A Special Report on Disaster Risk Management (1999, 16 pp., free) examines the costs of disasters, discusses the impacts of catastrophes on insurance providers, explains the psychological consequences on victims, outlines the difficulties that arise when international disaster aid is inappropriate and overlooks mitigation requirements, dispels several Hollywood myths about disasters, and presents a discussion of Project Impact by James Lee Witt, Director of the U.S. Federal Emergency Management Agency.

Learning from the World Bank's Experience of Natural Disaster Related Assistance (Working Paper Series #2, 1999, 54 pp., free)

suggests that increasing vulnerability requires that natural disaster management be at the heart of economic and social development in disaster-prone countries. The report contains an analysis of the World Bank's experience providing disaster assistance in 56 countries. The bank has funded 198 projects since 1980, 102 of which were for reconstruction following disaster and 96 of which were for mitigation. With this experience, the World Bank and borrowers are developing a greater awareness of the need to mitigate the effects of natural disasters prior to their occurrence. The report outlines several issues the bank feels must be addressed if the impacts of future disasters are to be held in check, including making disaster mitigation a goal of sustainable development, assessing damage and potential losses, evaluating costs and benefits of disaster management, creating adequate incentives for disaster management, sharing in the costs of recovery, and providing insurance for projects in developing countries.

To order copies of these documents, contact the Disaster Management Facility, World Bank, Room F4K-282, 1818 H Street, N.W., Washington, DC 20433; e-mail: dmf@worldbank.org.

Electronic Stuff

Inland Wind-Resistant Construction: Upgrading the Woodframe Home. 2000. VHS. 11 minutes. Free.

Winds of Change? The Urbana Project. 2000. VHS. 24 minutes. Free. A limited number of these videos are available from Baxley Media Group, 510 West Main, Urbana, IL 61801-2504; (217) 384-4838; e-mail: carolyn@baxleymedia.com.

As many readers of the *Observer* already know, proper construction methods can greatly reduce damage caused by natural hazards. Recently, the Building Safety Division of the City of Urbana, Illinois, created two videos to raise awareness about the importance of wind-resistant building techniques. Traditional platform framing often does not provide adequate protection from high winds for woodframe homes. *Inland Wind-Resistant Construction* explains to homeowners the potential weaknesses in platform framing and new construction techniques that can prevent serious wind damage of structural joints.

Winds of Change? was created to explain to builders, code officials, and homeowners construction techniques that create a continuous load path, the dynamics of wind, and retrofitting an existing home to be wind-resistant. It highlights a demonstration project that applies the new techniques.

Seeking Articles

The *Electronic Journal of Emergency Management* is a peer-reviewed, on-line journal that specializes in articles dealing with emergency management, business continuity, and disaster science. The editors are currently seeking contributions from students, faculty, researchers, and emergency management and business continuity practitioners. They particularly welcome disaster case studies and historical analyses, summaries of both qualitative and quantitative research, and papers on new or emerging topics that would normally not be examined in other publications. For more information about the journal, submission requirements, and the peer review process, or to view the current issue, see: http://members.tripod.com/~Richmond_ESM/index.html; or contact Walter Green, Assistant Professor of Emergency Services Management, School of Continuing Studies, University of Richmond, Richmond, VA 23173; (804) 287-1246; e-mail: wgreen@richmond.edu.

THE HAZARDS CENTER

The NATURAL HAZARDS RESEARCH AND APPLICATIONS INFORMATION CENTER was founded to strengthen communication among researchers and the individuals and organizations concerned with mitigating natural disasters. The center is funded by the National Science Foundation, Federal Emergency Management Agency, National Weather Service, U.S. Geological Survey, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Department of Transportation, National Aeronautics and Space Administration, the Institute for Business and Home Safety, and the Public Entity Risk Institute. Please send information of potential interest to the center or the readers of this newsletter to the address below. The deadline for the next *Observer* is May 15, 2000.

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Copies of the *Observer* and the Hazards Center's e-mail newsletter, *Disaster Research*, are also available from the Natural Hazards Center's World Wide Web site:

<http://www.colorado.edu/hazards>

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